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KEY

TO

COLBURN'S

COMMON-SCHOOL ARITHMETIC.

BY

DANA P. COLBURN,

PRINCIPAL OF THE RHODE ISLAND STATE NORMAL SCHOOL, AUTHOR OF
"ARITHMETIC AND ITS APPLICATIONS," THE "CHILD'S
BOOK OF ARITHMETIC," ETC.

PHILADELPHIA:
H. COWPERTHWAIT & CO.
1865.

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BY
DANA P. COLBURN,
PRINCIPAL OF THE RHODE ISLAND STATE NORMAL SCHOOL, A
"ARITHMETIC AND ITS APPLICATIONS," THE "CHILD'S
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PHILADELPHIA:
H. COWPERTHWAIT &
1865.

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NOTE. — The author is indebted to Mr. EDWARD A. GOODWIN, Mr. DEXTER S. STONE, and Miss E. R. L. for the answers in the first part of this Key. The solutions in the second part are his own.

Teachers who may detect any errors in this first edition, will confer a favor by sending a note of them to the author, at Bristol, R. I.

KEY

TO

COLBURN'S COMMON-SCHOOL ARITHMETIC.

Art. 10.—(p. 14.

1. 9,658.
2. 29,658.
3. 829,658.
4. 302,302.
5. 6,060.
6. 90,387.
7. 70,070.
8. 486,586.
9. 27,111,712.
10. 8,176,300.
11. 560,314,243.
12. 2,002,007.
13. 20,020,070.
14. 200,200,200.
15. 75,025,024.
16. 250,240,240.
17. 4,000,005.
18. 46,000,046.
19. 469000469.
20. 87,943,278,432.
21. 630,000,000,630.
22. 90,090,090,090.
23. 400,004,400,004.
24. 878,943,736,409,813.
25. 613,460,203,007,000,068,001.

Art. 13.—(p. 17.)

1. .006
2. .45
3. 8.9
4. 8.9
5. .89
6. 6.05
7. 29.436
8. .0065
9. 81.3
10. 8.13
11. .813
12. 61.042
13. 527,000.527
14. 914,213,708.611,268
15. .000,000,071
16. 6000.5
17. 14.2448
18. 70,000,000.000,009
19. 89,089,089.089,089,089
20. 3,000,000.00003

Art. 14.—(p. 19.)

1. 360.
2. 42,300.
3. 627.
4. 53960.
5. 24.7
6. 36.97
7. .00428
8. .03
9. 4.
10. 7.279

11. 6,597,000.
12. .0029
13. 6.73
14. 427.9
15. .00006
16. 7,500,000.
17. .39
18. 578.97
19. 87,000,000.
20. .000087

Art. 34.—(p. 33.)

1. 1212.
2. 1086.
3. 1052.
4. 1343.
5. 1232.
6. 1731.
7. 1222.
8. 1379.
9. 1862.
10. 1824.
11. 2886.
12. $21.92
13. 15203
14. 20449
15. $13.626
16. $203.31
17. $251.22
18. 1271051.
19. 1252771.
20. 2996166.
21. 2072741.
22. $2456.42
23. $106.891
24. $104.053
25. 1816.30 bu.
26. 3050362
27. 166.550
28. 607.747
29. 1.904381
30. 1884.751
31. 4886.665
32. 6079.64188
33. 5417.275
34. 99230.317
35. 95216725
36. 2945
37. 24385
38. 255007
39. $50.111
40. $287.85
41. 26589339
42. 5262
43. 70.12269
44. 5328.952
45. 41.76
46. 427.93
47. 1281.39
48. 129239
49. 218427
50. 693.709

Art. 36.—(p. 35.)

1. $460.
2. $269.04
3. 2107 yds.
4. 37.124 A. in wood-lot.
   74.248 A. in all.
5. 2009355 bales.
6. $16646.
7. $1293.84
8. 4022868 bu.
9. 187676 inhabitants.
10. 24097436 bu.
11. $637.62
12. $5856.43 for 2d.
    $9845.10 for both.
13. 56688 bu.
14. 2319148 bales.
15. 63387005 miles.
16. $716.22 in bank stock.
    $852.81 in trade.
    $2047.39 in all.

17. $776.42 = B's.
$1352.51 = C's.
$2556.76 = whole sum.
18. 5270 feet.
19. $25303.04
20. $13793.98

Art. 38.—(p. 39.)

1. £133 9 s. 4 d. 3 far.
2. £203 19 s. 10 d. 1 far.
3. 154 yd. 2 na.
4. 245 yd. 1 ft. 1 in.
5. 177 bu. 3 pk. 1 pt.
6. 23 gal. 1 qt. 2 gi.
7. 183 A. 24 sq. rd.
8. 21 sq. yd. 2 sq. ft. 29 sq. in.
9. 1105 m. 3 fur. 6 rd.
10. 201 lb. 16 dwt. 12 gr.
11. 111 lb. 9 oz. 11 gr.
12. 48° 48′ 34″.
13. 126 ℔. 9 ℥. 7 ʒ. 2 ℈. 13 gr.
14. 199 ℔. 7 ℥. 2 ʒ. 1 ℈. 11 gr.
15. 1225 T. 17 cwt. 1 lb. 15 dr.
16. 38 T. 9 cwt. 1 qr. 22 lb. 7 oz. 13 dr.
17. 35 wk. 2 da. 12 h. 49 min. 19 sec.
18. 299 wk. 4 da. 1 h. 36 min. 20 sec.
19. 38 rd. 4 yd. 1 ft. 2 in.
20. 230 m. 5 fur. 18 rd. 1 yd. 1 ft. 2 in.
21. 42 rd. 2 ft. 10 in.
22. 3502 m. 7 fur. 3 rd. 1 yd. 2 ft. 4 in.
23. 39 sq. rd. 26 sq. yd. 8 sq. ft. 112 sq. in.
24. 222 A. 1 R. 24 sq. rd. 28 sq. yd. 7 sq. ft. 105 sq. in.
25. 248 C. 6 cu. ft. 1482 cu. in.
26. 239 C. 6 cd. ft. 15 cu. ft. 1344 cu. in.
27. £93 6 s. 1 d. 1 far.
28. 266 lb. 10 oz. 11 dwt. 7 gr.
29. 77 ℔. 5 ℥. 3 ʒ. 2 ℈. 5 gr.
30. 33 bu. 2 pk. 3 qt. 1 pt.
31. 32 T. 17 cwt. 1 qr. 5 lb. 4 oz. 14 dr.
32. 180 C. 3 cd. ft. 4 cu. ft. 948 cu. in.
33. 40 wk. 5 da. 17 hr. 33 min. 39 sec.
34. 95 m. 5 fur. 8 rd. 2 yd. 2 ft. 7 in.
35. 37 bu. 1 pk. 1 gi.
36. £2749 10 s. 4 d. 3 far.
37. 18 lb. 1 oz. 18 dwt. 8 gr.
38. £121 15 s. 2 d.

Art. 39.—(p. 43.)

1. Performed.
2. 3435.
3. 33.31
4. .2431
5. 4472.
6. 5126.
7. 6333.
8. 2551.
9. 4444.
10. 7531.
11. 2581.

Art. 41.—(p. 46.)

1. 1856
2. 3188
3. 9997
4. 1196
5. 803
6. 2439
7. 103
8. $289.94
9. $5327.88
10. 24024
11. 5769
12. $5.78

13. $.14
14. $178.02
15. 612
16. 8089
17. 1385
18. 9903
19. 530.865
20. 4937.6262
21. 2733
22. 2727
23. 3087
24. 18886
25. 388.89
26. 78.885
27. 1008
28. 7577.46
29. 89.9803
30. 5074.944
31. $1525
32. 43498
33. 2508 ft.
34. 1240
35. 1189 A.
36. $4.125
37. $3065.871
38. 492525 votes.
39. 961282 "
40. 468757 "
41. 2303094 "
42. 1365580 "
43. 380530 "
44. $777.52
45. 49 miles.
46. $28.42
47. $537
48. 402 cents.

Art. 42.—(p. 48.)

1. Performed.
2. 7073
3. 2982
4. 1567
5. 271
6. 2994
7. $23.22
8. $4.18
9. 19577
10. 17952
11. 2278.605
12. 43.965
13. $343.662
14. $.09
15. $10.896
16. 2160
17. 2816
18. 2.5264
19. 1450.66848
20. 1082.687
21. $2.086

Art. 44.—(p. 50.)

1. £13 17 s. 3 d.
2. £37 14 s. 6 d. 3 far.
3. 8 lb. 11 oz. 1 dr.
4. 2 cwt. 2 qr. 17 lb. 13 oz. 10 dr.
5. 21 T. 13 cwt. 2 qr. 20 lb. 14 oz. 6 dr.
6. 22 bu. 2 pk. 4 qt. 1 pt.
7. 26 bu. 1 pk. 3 qt. 1 pt.
8. 17 w. 6 da. 20 h. 49 m. 37 sec.
9. 25 w. 4 da. 2 h. 23 m. 45 sec.
10. 16 ℔. 3 ℥. 2 ʒ. 1 ℈. 11 gr.
11. 8 ℥. 6 ʒ. 1 ℈. 9 gr.
12. 15 sq. yd. 2 sq. ft. 61 sq. in.
13. 13 C. 12 cu. ft. 1504 cu. in.
14. 14 C. 7 cd. ft. 9 cu. ft. 426 cu. in.
15. 10° 47′ 35″
16. 24° 44′ 30″
17. 196 lb. 9 oz. 5 dwt. 11 gr.
18. £10 13 s. 9 d. 1 far.
19. 91 T. 6 cwt. 1 qr. 10 lb.
20. 127 bu. 1 pk. 1 pt.
21. 35 yd. 1 qr. 1 na.

Art. 45.—(p. 51.)

1. Performed.
2. 22 rd. 2 yd. 2 ft. 11 in.

3. 2 yd. 1 ft. 5 in.
4. 35 m. 13 rd. 5 in.
5. 88 m. 6 fur. 38 rd. 4 yd. 5 in.
6. 21 m. 4 fur. 15 rd. 5 yd. 1 ft. 1 in.
7. 1 in.
8. 1 in.
9. 6 rd. 4 yd. 1 ft. 7 in.
10. 136 m. 7 fur. 39 rd. 4 yd. 2 ft. 6 in.
11. 8 sq. rd. 3 sq. yd. 1 sq. ft. 1 sq. in.
12. 82 A. 1 R. 16 sq. rd. 8 sq. yd. 7 sq. ft. 112 sq. in.
13. 288 A. 3 R. 38 sq. rd. 27 sq. yd. 4 sq. ft. 37 sq. in.
14. 18 sq. rd. 5 sq. yd. 3 sq. ft. 112 sq. in.
15. 1 R. 25 sq. yd. 2 sq. ft. 117 sq. in.
16. 13 A. 1 sq. in.
17. 47 A. 3 R. 39 sq. rd. 29 sq. yd. 5 sq. ft. 36 sq. in.
18. 1 A. 1 R. 39 sq. rd. 29 sq. yd. 4 sq. ft. 79 sq. in.
19. 0.
20. 2 in.
21. 8 sq. in.

Art. 46.—(p. 53.)

1. 2 cwt. 3 qr. 17 lb.
2. £268 15 s. 6 d.
3. 4 rd. 2 yd. 2 ft. 6 in.
4. 1 lb. 4 oz. 14 dwt. 10 gr.
5. 1 T. 9 cwt. 1 qr. 19 lb.
6. $566.78
7. $2635
8. $22.87
9. £337 4 s. 6 d.
10. $2024.74
11. 115 miles.
12. $34.24
13. $2052.44
14. 371 C. 1 cd. ft., worth $987.875
15. Gained $234.895

Art. 48.—(p. 57.)

1. 25629
2. 21915
3. 37512
4. 352764
5. 1861.34
6. 1397.40
7. 52665.6
8. 2804.718
9. 3639.96
10. 1884.02
11. .63774
12. 2333.694
13. 8640247
14. 5255448
15. 385.476
16. 8888886.
17. 271592
18. .0379685
19. 2601.447
20. .069376
21. 2403.582
22. 651.9975
23. 3187584
24. 747776
25. 71808
26. 93942
27. 90.99
28. .68922
29. 172.076
30. 63671.92
31. $2998.52
32. $208.125
33. 26.25
34. 1776 lb.
35. $982.80
36. 1372 lb.
37. 18.975 acres.
38. 25912 lb.
39. $226.50

40. $2794
41. $1976
42. $46352
43. 3441 pt.
44. 27912 gi.
45. 5238 ft.
46. $86.13
47. $92.45
48. $103.68
49. $97.79
50. $7.47
51. 4100 ℔.
52. $46.24
53. 14048 fur.
54. 11140 qt.
55. 53523 sq. ft.
56. 3256 fur.
57. 4396 da.
58. 1904 R.
59. 11496 qt.
60. Performed.
61. 1406 na.
62. 869 sq. ft.
63. 3007 pt.
64. 1028 ℈.
65. 6899 fur.
66. $28.17
67. $54.32
68. $562.50
69. 343 sq. ft.
70. 2506 sq. ft.
71. 6148 sq. rd.
72. 612 sq. ft.
73. 688 cu. ft.
74. 1224 cu. in.
75. 5904 cu. ft.

Art. 49.—(p. 60.)

1. Performed.
2. 300032.
3. 81528.
4. 209352.
5. 246792.
6. 573888
7. 274554
8. 135289
9. 171846.
10. 68334
11. 305775
12. 386.85
13. 816.75
14. 205.872
15. 5561.6
16. 107064.
17. 151116
18. 262494.
19. 1784.72
20. .2065
21. 38839.5
22. Performed.
23. 115880
24. 25795
25. 175.840
26. 17292000
27. 4171000
28. 505620
29. 14.7
30. 4418880
31. 1487190
32. 22368000
33. 1426800.
34. 3950
35. 7310700
36. 43760
37. 26390
38. 2943900
39. 2614800
40. 1645000
41. 25100000000
42. 1583700000

Art. 50.—(p. 61.)

1. Performed.
2. 539251.
3. 157258.
4. 100717.
5. 263115.
6. 667008.

7. 258576.
8. 385084
9. 936240.
10. 1374400.
11. 1245760.
12. 631449
13. 808621.
14. 801918.
15. 5386824.
16. 1927464.
17. 1220978.
18. 9801640
19. 22434270
20. 10886096
21. 20573894
22. $3450
23. 4503 qt.
24. 1728 sq. rd.
25. 13426 sq. ft.
26. 13950 gal.
27. 740 cu. ft.
28. 24679 cu. in.
29. 4758 sq. ft.
30. 20264 hills.
31. 79800 oz.
32. $59.755
33. $9.90
34. $6302.51
35. 3312 sq. in.
36. 7563 lb.
37. 56330 qr.
38. 2597 hours.
39. $1341.90
40. $17.79
41. $6981.16
42. $3050.25
43. $490.
44. $161.75
45. $855.
46. 44415 cu. ft.
47. $41.40
48. $788.97
49. $7979.76
50. $189.64

Art. 51.—(p. 64.)

1. Performed.
2. £55 7 s. 1 d.
3. £79 9 s. 5 d.
4. 205 lb. 5 oz. 17 dwt. 1 gr.
5. 260 gal. 1 qt. 1 pt. 2 gi.
6. 418 bu. 1 qt.
7. 101 yd. 2 qr.
8. 53 le. 1 m. 4 fur. 30 rd.
9. 484 yd. 2 ft. 2 in.
10. 11 w. 6 da. 16 h. 59 m. 26 sec.
11. 77 T. 15 cwt. 1 qr. 13 lb. 15 oz.
12. 104° 39′
13. £237 7 s. 8 d.
14. 408 m. 5 rd. 5 yd. 10 in.
15. 116 m. 2 fur. 5 rd. 1 yd. 2 ft. 6 in.
16. £30 7 s. 4 d.
17. £52 13 s. 9 d.
18. 525 yd.
19. 88 cwt. 1 qr. 4 lb.
20. 59 rd. 1 ft. 10 in.
21. 5 T. 2 cwt. 3 qr.
22. 34 T. 9 cwt. 2 qr. 1 lb.
23. 303 m. 3 fur. 12 rd. 4 yd.
24. 15 oz. 8 dwt. 12 gr.
25. $\begin{cases} \text{41 cwt. 2 qr. 10 lb.} = \text{wt.} \\ \text{£96 13 s. 9 d.} = \text{cost.} \end{cases}$
26. $1433.17

Art. 53.—(p. 68.)

1. 159
2. $97\frac{1}{7}$
3. $64\frac{2}{4}$
4. 268.
5. $1399\frac{3}{6}$
6. 9.94
7. 8.58
8. $1.080\frac{3}{8}$
9. $.0397\frac{6}{9}$
10. 22.44
11. $334\frac{4}{6}$
12. $884\frac{1}{9}$

13. $11.26\frac{1}{8}$
14. $.243\frac{4}{7}$
15. $1430\frac{3}{4}$
16. $95\frac{4}{5}$
17. $195\frac{1}{3}$
18. 151
19. $132\frac{1}{7}$
20. $429\frac{6}{9}$
21. $601\frac{1}{5}$
22. 811.
23. $4.65\frac{3}{7}$
24. $982\frac{7}{8}$
25. $3.83\frac{5}{8}$
26. $51.9\frac{2}{9}$
27. $323\frac{5}{8}$
28. $7.52\frac{3}{4}$
29. $700\frac{4}{5}$
30. 1387
31. 447 bbl.
32. 289 bbl.
33. 66 da.
34. $33\frac{1}{4}$ h.
35. $55\frac{1}{5}$ da.
36. $.24
37. $963\frac{5}{6}$ lb.
38. 595 steps.
39. 3158 bills.
40. 735 bills.
41. 518 men.
42. $2917\frac{2}{3}$ bottles.
43. Performed.
44. 373 yd. 1 qr. 3 na.
45. 33 lb. 5 oz. 7 dr.
46. £3 19 s. 2 far.
47. 51 le. 2 m. 7 fur.
48. 180 gal. 3 qt. 2 gi.
49. 20 mo. 3 w. 6 da.
50. 17 yd. 2 ft. 9 in.
51. $849
52. 196 lb.
53. $73\frac{4}{8}$ marbles.
54. $817\frac{6}{9}$
55. $8.44
56. $12\frac{5}{11}$ da.
57. $97\frac{2}{3}$ days.
58. $.469
59. $1.19
60. 1033 sec.
61. 950 bottles.
62. 122 sheets.
63. 733 lb.
64. 1425 lb.
65. 12500 quills.
66. 18375 pens.

Art. 54.—(p. 71.)

1. Performed.
2. 533.
3. 192.
4. 299.
5. 1479.
6. 2096
7. 1077.
8. 573.
9. 1102.
10. 175 and 41 rem.
11. 162 and 23 rem.
12. 314 and 2 rem.
13. 90 and 15 rem.
14. 197 and 9 rem.
15. 47 and 52 rem.
16. 58 and 29 rem.
17. 332 and 9 rem.
18. 269 and 18 rem.
19. 150 and 25 rem.
20. 144 and 3 rem.
21. Performed.
22. 9 and 575 rem., or 9.958333
23. 189 and 14 rem., or 189.7
24. 9 and 3697 rem., or 9.7394
25. 653 and 47 rem., or 653.94
26. 74 and 728 rem., or 74.808888
27. 49 and 887 rem., or 49.633571
28. 15 and 254 rem., or 15.120952
29. 140 and 597 rem., or 140.4975

6 and 114 rem., or 136.475
2 and 107 rem., or 332.594444
4 and 202 rem., or 104.561111
and 683 rem., or 86.85375

Art. 55.—(p. 73.)

rformed.
$\frac{4}{5}$
$\frac{0}{1}$
$\frac{6}{4}$
$\frac{5}{9}$
$\frac{8}{8}$
$\frac{5}{7}$
$\frac{8}{5}$
$\frac{6}{5}$
$\frac{1}{2}$
$\frac{2}{3}$
$\frac{15}{17}$
$\frac{95}{21}$
$\frac{52}{55}$
$\frac{25}{57}$
$\frac{54}{75}$
$\frac{93}{98}$
$\frac{11}{69}$
$\frac{616}{256}$
$\frac{293}{167}$
$\frac{172}{947}$

Art. 57.—(p. 75.)

$\frac{35}{52}$
$\frac{12}{45}$
$\frac{18}{72}$
$\frac{20}{91}$
$\frac{14}{35}$
$\frac{42}{49}$
$\frac{37}{57}$
$\frac{26}{45}$
$\frac{17}{68}$
1$\frac{31}{85}$
$\frac{90}{12}$
8$\frac{31}{212}$
$\frac{61}{15}$

14. 7$\frac{237}{391}$
15. .0031$\frac{61}{198}$.
16. 1954$\frac{13}{45}$
17. .00751$\frac{46}{83}$
18. 204$\frac{70}{127}$
19. 892$\frac{22}{41}$
20. 2558$\frac{24}{25}$
21. 637$\frac{53}{62}$
22. 6.54$\frac{14}{85}$
23. 1059$\frac{43}{45}$
24. 194$\frac{265}{328}$
25. .00125$\frac{218}{1278}$
26. 95$\frac{3370}{5079}$
27. 41$\frac{1576}{4985}$
28. 632$\frac{6}{99}$
29. .0070$\frac{2766}{5387}$
30. .76$\frac{1454}{8215}$
31. 25 mo.
32. 47 cattle.
33. 32 suits.
34. 68$\frac{3}{10}$ acres.
35. 36 pieces.
36. 176$\frac{11}{185}$ hours.
37. 121$\frac{25}{196}$ bbl.
38. 1 T. 16 cwt. 2 qr. 11 lb. 15 oz. 11 dr.
39. 108 lb. 2 oz. 17 dwt. 10 gr.
40. 2714 sq. yd. 4 sq. ft. 45 sq. in.
41. 305 cu. ft. 903 cu. in.
42. £395 4 s. 7 d. 1 far.
43. 55 hats and $.33 rem.
44. 22 passengers.
45. 229 dozen.
46. $181.
47. 291$\frac{193}{785}$ bbl.
48. 39.67\frac{31}{37}$
49. $49.80
50. $26.50

Art. 58.—(p. 77.)

1. Performed.
2. Performed.

3. £3 7 s. 5 d. $3\frac{2}{5}$ qr.
4. 4 T. 15 cwt. 23 lb. 7 oz. 9 dr.
5. 6 T. 7 cwt. 2 qr. 9 lb. 7 oz. 2 dr.
6. 12 lb. 11 oz. 19 dwt. $4\frac{1}{5}$ gr.
7. 1 ℔. 10 ℥ 7 ʒ 19 gr.
8. 39 bu. 3 pk. 1 qt. 1 pt. $3\frac{7}{11}$ gi.
9. 4 bu. 2 pk. $1\frac{3}{14}$ pt.
10. 6 gal. 2 qt. 1 pt. $3\frac{4}{5}$ gi.
11. 11 yd. 3 qr. $1\frac{7}{8}$ na.
12. 27 yd. 3 qr. 1 na.
13. 4 rd. 4 yd. $6\frac{2}{7}$ in.
14. 9 rd. 5 yd. 1 ft. $9\frac{2}{5}$ in.
15. 5 A. 3 R. 9 sq. rd. 10 sq. yd. 108 sq. in.
16. 1 sq. rd. 13 sq. yd. 2 sq. ft. $74\frac{5}{12}$ sq. in.
17. 2 cd. 1 cd. ft. 3 cu. ft. $786\frac{15}{25}$ cu. in.
18. 42 cd. 5 cd. ft. 15 cu. ft. $954\frac{1}{5}$ cu. in.
19. 7 w. 3 da. 19 h. 14 m. $43\frac{8}{10}$ sec.
20. £8 1 d. $3\frac{2}{6}$ qr.
21. £9 14 s. 9 d. $3\frac{7}{9}$ qr.
22. 3 cwt. 2 qr. 4 lb. 5 oz. $5\frac{2}{8}$ dr.
23. 1 T. 8 cwt. 1 qr. 17 lb. 1 oz. $10\frac{18}{19}$ dr.
24. 11 ℥ 1 ʒ $9\frac{3}{13}$ gr.
25. 1 m. 2 fur. 29 rd. 3 yd. 1 ft. $9\frac{22}{29}$ in.
26. 3 fur. 30 rd. 3 yd. $8\frac{8}{17}$ in.
27. 1 cd. ft. 1 cu. ft. $785\frac{5}{11}$ cu. in.
28. 6 rd. 5 yd. $6\frac{1}{7}$ in.
29. 1 A. 22 sq. rd. 27 sq. yd. 2 sq. ft. $4\frac{7}{10}$ sq. in.
30. 1 m. 3 fur. 22 rd. 1 yd. 8 in.

Art. 59.—(p. 79.)

1. £17 4 s. 3 d. $3\frac{1}{8}$ qr.
2. 65 gal. 2 qt. 1 pt. $\frac{3}{7}$ gi.
3. 3 R. 30 sq. rd. 10 sq. yd. 5 sq. ft. $60\frac{5}{11}$ sq. in.
4. 10 m. 7 fur. 15 rd. 4 yd. $4\frac{2}{4}$ in.
5. 2 lb. 10 oz. 6 dwt. $23\frac{3}{11}$ gr.
6. 3 qr. 21 lb. 12 oz. $3\frac{5}{9}$ dr.
7. 2 bu. 3 pk. 3 qt.
8. 49 bu. 3 pk. 1 pt.
9. 1 T. 19 cwt. 1 qr. 6 lb. 5 oz. $5\frac{7}{21}$ dr.
10. 3 ℥ 7 ʒ 1 ℈ $1\frac{10}{20}$ gr.
11. 2 lb. $15\frac{2}{3}$ gr.
12. $49\frac{1}{3}$ bbl.
13. $265.183
14. $85.32
15. $276.25
16. $677.25
17. $984.25
18. 6 yr. $4\frac{12}{13}$ mo.
19. 294 bbl.
20. £29 17 s. 2 d. 1 qr.
21. $228\frac{13}{197}$
22. 5628 steps.
23. £29 15 s. 6 d.
24. $22.56
25. $77.07
26. $3142.80
27. 2160 sq. ft.
28. 960 sq. ft.
29. 540 sq. ft.
30. 3104 sq. ft.
31. 20 rd. wide.
    $154.
32. William has $333.
    Joseph has $559.
    Robert has 161.33\frac{1}{3}$
33. 1919 pt.
    $479.75
    392 bottles.

Art. 60.—(p. 82.)

1. Performed.
2. 74,888.
3. 526,068.
4. 28,033.
5. 157,016.

6. 7,585,488.
7. 9,012,702.
8. 6,651,897.
9. 37,051,350.

Art. 61.—(p. 83.)

1. Performed.
2. 8,487,504.
3. 342,645,732.
4. 482,724.
5. 612,598.
6. 84,395,053.
7. 846,722,153,277.

Art. 62.—(p. 83.)

1. Performed.
2. 80,475.
3. 216,275.
4. 915,875.
5. 161,300.
6. 91,316$\frac{2}{3}$.
7. 95833$\frac{3}{6}$.

Art. 63.—(p. 84.)

1. Performed.
2. Performed.
3. 4,177,341.
4. 1,176,264.
5. 58,950,787$\frac{1}{2}$
6. 230,185,536.
7. 5,261,671,038.
8. 34,758,792.
9. 953,918,262.
10. 1,500,542,955.

Art. 64.—(p. 84.)

1. Performed.
2. 3568$\frac{13}{27}$
3. 275$\frac{3}{98}$
4. 11,310$\frac{19}{73}$
5. 2,389$\frac{7}{196}$
6. 1064$\frac{331}{783}$
7. 363$\frac{535}{813}$

Art. 65.—(p. 85.)

1. Performed.
2. 66.992, or 66 and 124 rem.
3. 155.76, or 155 and 12$\frac{4}{6}$ rem.
4. 334.968, or 334 and 242 rem.
5. 3766.52, or 3766 and 13 rem.
6. 2476.047, or 2476 and 15$\frac{2}{3}$ rem.
7. 5139.44, or 5139 and 5$\frac{4}{8}$ rem.

Art. 66.—(p. 85.)

4.

A. B.

Bought of C. D.

7 gal. Molasses	@ \$.39	\$2.73
1 box, 28 lb., Soap	.09	2.52
1 Cheese, 18 lb.	.09	1.62
31 lb. Butter	.21	6.51
		\$13.38

Rec'd Pay't,

C. D.

5.

A. B.

Bought of C. D.

67 bu. Potatoes	@ $ .40	$ 26.80
49 bu. Ind. corn	.75	36.75
27 bu. Rye	1.50	40.50
15 bu. Wheat	2.12	31.80
58 bbl. Apples	1.87	108.46
		$244.31

Cr.

By 3 Cows	@ $24.00	$72.00
" 1 Plough		15.75
" Cash to Bal		156.56
		$244.31

Settled as above,

C. D.

6.

A. B.

Bought of C. D.

6	doz.	Warren's Common-School Geography	@$11.25...	$67.50
6	"	" Physical Geography	11.75...	70.50
9	"	Colburn's 1st Book of Arithmetic	2.87...	25.83
6	"	" Com. Sc. Arithmetic	5.50...	33.00
6	"	" Arith. and Applications	9.00...	54.00
8	"	Leach's Complete Speller	2.40...	19.20
9	"	Greene's Introduction	2.88...	25.92
4	"	" Analysis	5.25...	21.00
3		Webster's 4to Dictionary	5.50...	16.50
5		Brande's Encyclopedia	3.87...	19.35
1		set, 14 vol., American Encyclopedia	2.12...	29.68
				$382.48

Rec'd Pay't,

C. D.

Art. 67.—(p. 89.)

Inventory of the Assets and Liabilities of A. B., Sept. 1, 1857.

My Assets are —

Cash		$150.00
50 bu. Potatoes	@ $ .60	30.00
8 bbl. Apples	2.25	18.00
		$198.00

My Liabilities are nothing.

Dr. 1857	Cash.	$	¢
Sept. 1	To Cash on hand	150	00
" 4	" 2 bbl. Apples @ $ 2.33	4	66
" 12	" 2 tons Hay 19.63	39	26
" "	" 3 days' Labor 1.75	5	25
" "	" 25 bu. Potatoes .60	15	00
" "	" 1 bbl. Apples	2	80
" 15	" 1 bbl. Apples	2	25
" 16	" 53 lb. Butter @ $.22	11	66
" "	" 40 lb. Cheese .09	3	60
" 17	" Harness	35	00
" 23	" Peaches and Pears	6	83
" 24	" 3¼ bu. Peaches @ $1.20	3	90
" 26	" Cash for Labor	3	15
" "	" George Brown on acc't	5	00
" 30	" George Brown to bal. acc't	2	25
" "	" Henry Gay to bal. acc't	19	37
		309	48
Oct. 1	To Balance from old Acc't	114	61

1857	Cash.	Cr. $	¢
Sept. 5	By 15 bbl. Apples @ $2.25	33	75
" "	" Expenses		50
" 10	" 5 tons Hay @ $16.75	83	75
" 11	" Cash paid Charles French on account	15	00
" 15	" 1 Plough	6	50
" "	" 1 Cultivator	5	62
" 21	" Cash paid to Dr. Howe for services	1	50
" "	" 12 bu. Peaches @ $1	12	00
" "	" 5 bu. Pears @ $1.25	6	25
" 24	" 1 Dress coat	20	00
" 29	" Cash paid Charles French on account	10	00
Oct. 1	" Balance to new account	114	61
		309	48

Dr. *Henry Gay.*

1857			
Sept. 2	To 12 bu. Potatoes @ $ .63	7	56
" "	" 5 bbl. Apples 2.37	11	85
" 14	" 27 lb. Butter .23	6	21
" "	" 26 lb. Cheese .09	2	34
		27	96

Dr. *Edward Morris.*

1857			
Sept. 10	To 2 bbl. Apples @ $2.35	4	70
	" 7 bu. Potatoes .60	4	20
" 16	" 25 cwt. Hay .90	22	50
" 18	" 10 bu. Chenango Potatoes .58	5	80
Oct. 1	" Balance to new acc't	5	17
		42	37

Dr. *Charles French.*

1857			
Sept. 5	To 3 days' Labor @ $1.62	4	86
" 11	" Cash on account	15	00
" 14	" 2 days' Labor @ $1.75	3	50
" 21	" 1 Plough	8	00
" "	" 1 Cultivator	6	75
" 29	" Cash on account	10	00
" "	" Labor	10	00
Oct. 1	" Balance to new acc't	63	27
		121	38
Oct. 1			

Henry Gay. *Cr.*

1857			
Sept. 3	By 6 lb. Beef @ $.12		72
" 5	" 9 lb. Sausages .13	1	17
" 12	" 7 lb. Corned Beef .12		84
" 19	" 9 lb. Mutton .12	1	08
" "	" 25 lb. Lard .13	3	25
" 28	" 5 lb. Beef .11		55
" "	" 7 lb Sausages .14		98
" 30	" Cash to Balance	19	37
		27	96

Edward Morris. *Cr.*

1857			
Sept. 5	By 1 pair Children's Shoes		87
" "	" 1 pair Women's Gaiter-boots	1	75
" 8	" Mending Boots	1	00
" 16	" 1 Harness	33	75
" 28	" 1 pair thick Boots	3	00
" "	" 1 pair thick Boots	2	00
" "		42	37
Oct. 1	By Balance from old acc't	5	17

Charles French. *Cr.*

1857			
Sept. 11	By 30 bu. Dover Potatoes @ $ .58	17	40
" "	" 45 bu. Chenango Potatoes .56	25	20
" "	" 100 lb. Butter .19	19	00
" "	" 124 lb. Cheese .08	9	92
" 14	" 3 tons Hay 16.62	49	86
		121	38
Oct. 1	By Balance from old acc't	63	27

Dr. *Smith & Jones.*

1857			
Sept. 12	To 1 bbl. Apples	2	30
" "	" 5 bu. Dover Potatoes @ $ .60	3	00
" 16	" 2 days' Labor 1.75	3	50
" 23	" 2¾ bu. Peaches 1.20	3	30
" "	" 1½ bu. Pears 1.40	2	10
		14	20
Oct. 1	To Balance from old acc't	4	50

Dr. *Alfred Baker.*

1857			
Sept. 7	To 1 day's Labor	1	75
" "	" 25 bu. Potatoes @ $ .65	16	25
" 18	" 2 days' Labor 1.62	3	24
" "	" 2½ tons Hay 18.50	46	25
" 23	" 3 pk. Peaches .33		99
" "	" 2 pk. Pears .35		70
		69	18
Oct. 1	To Balance from old acc't	69	18

Dr. *Oliver Ellis.*

1857			
Sept. 9	To 2 days' Labor @ $1.75	3	50
" 19	" 10 bu. Chenango Potatoes .54	5	40
" 23	" 3 pk. Peaches .33		99
" "	" 2 pk. Pears .35		70
" "	" 8 lb. Butter .23	1	84
" "	" 16 lb. Cheese .10	1	60
		14	03
Oct. 1	To Balance from old acc't	5	41

Smith & Jones. *Cr.*

1857				
Sept. 5	By 6 lb. Brown Sugar	@ $ .12..................		72
" "	" 6 lb. white Sugar	.14..................		84
" "	" ½ lb. Young Hyson Tea	.64..................		32
" 12	" 4 lb. Java Coffee	.20..................		80
" "	" 3 lb. bar Soap	.08..................		24
" "	" 2 gal. Molasses	.63..................	1	26
" 16	" 3 qt. Sperm Oil	1.56 per gal......	1	17
" "	" 1 Ham, 13 lb.	.15..................	1	95
" 26	" 12 lb. Rice	.07..................		84
" "	" 12 lb. Sugar	.13..................	1	56
Oct. 1	" Balance to new acc't..............................		4	50
			14	20

Alfred Baker. *Cr.*

1857			
Oct. 1	By Balance to new acc't..	69	18
		69	18

Oliver Ellis. *Cr.*

1857			
Sept. 9	By 1 pair Pants..	5	25
" "	" 1 Vest..	3	37
Oct. 1	" Balance to new acc't..................................	5	41
		14	03

Inventory of the Assets and Liabilities of A. B., Oct. 1, 1857.

My Assets are —		
Cash		$114.61
25 bu. Chenango Potatoes	@ $ .56	14.00
11 bbl. Apples	2.25	24.75
42 lb. Cheese	.09	3.78
12 lb. Butter	.20	2.40
2 Tons, 5 cwt. Hay	.90 per cwt.	40.50
Smith & Jones owe me on account		4.50
Alfred Baker owes me on account		69.18
Oliver Ellis owes me on account		5.41
Total Assets		279.13
Liabilities —		
I owe Edward Morris		$ 5.17
I owe Charles French		63.27
Total Liabilities		68.44
Nett Assets		$210.69
My Assets, Sept. 1, were		$198.00
Hence, I have gained		12.69

Art. 70.—(p. 101.)

1. Performed.
2. $2^2 \times 3^2$
3. $2^3 \times 3$
4. 3^4
5. $3^2 \times 7$
6. 3^3
7. $2^4 \times 3$
8. $2^2 \times 3 \times 7$
9. $2^5 \times 3$
10. 5×7
11. $3^2 \times 11$
12. 2×3^3
13. $2 \times 3 \times 5$
14. Performed.
15. Performed.
16. $2^4 \times 3^2$
17. $2^2 \times 3 \times 11$
18. 13^2
19. 5×41
20. $2^7 \times 7$
21. $5^2 \times 11$
22. 3×47
23. $2 \times 3 \times 37$
24. 11×31
25. $5^2 \times 7$
26. 2^9
27. $2^2 \times 3 \times 61$
28. 17×31
29. $7^2 \times 19$
30. $3^3 \times 23$
31. 3×13^2
32. 5^4
33. Prime.
34. 29^2
35. 13×61
36. $7 \times 11 \times 13$
37. $2^6 \times 3^3$

38. $2^3 \times 7^2 \times 11$
39. 5^5
40. 47×131
41. $3^3 \times 53$
42. $5^3 \times 67$.
43. 3^8
44. $2 \times 3 \times 5 \times 7 \times 11$
45. $3 \times 7 \times 13 \times 17$
46. $2^3 \times 11 \times 61$
47. $3^2 \times 5 \times 181$
48. $3 \times 11 \times 251$
49. $2^2 \times 17 \times 29$
50. $2^4 \times 157$
51. 43×47
52. $7 \times 17 \times 23$
53. $2^4 \times 3^2 \times 7^2$
54. $3^5 \times 5^2$
55. 2×3^7

Art. 71.—(p. 102.)

1. Performed.
2. Performed.
3. Performed.
4. 6
5. 5
6. 12
7. 6
8. 51
9. 14
10. 12
11. 1
12. 35
13. 13
14. 36
15. 5
16. 1
17. 7
18. 1
19. 1
20. 30
21. 11
22. 231
23. 1
24. 4
25. 218
26. 6
27. 1
28. 3
29. 23
30. 13
31. 72
32. 109
33. 1296

Art. 72.—(p. 104.)

1. Performed.
2. 13
3. 29
4. 53
5. 1
6. 97
7. 119
8. 7
9. 1
10. 31
11. 77

Art. 73.—(p. 105.)

1. Performed.
2. 36
3. 105
4. 12
5. 72
6. 36
7. 75
8. 72
9. 24
10. 216
11. 432
12. 432
13. 98
14. 40
15. 42
16. 1584

17. 420
18. 945
19. 1183
20. 252
21. 600
22. Performed.
23. 120
24. 90
25. 1260
26. 36
27. 120
28. 60
29. 2520
30. 2520
31. 27720
32. 3960
33. 360
34. 11088
35. 15015
36. 420
37. 750
38. 1176
39. 64
40. 1620
41. 2652
42. 2280

Art. 78.—(p. 110.)

1. Performed.
2. Performed.
3. $\frac{41}{5}$
4. $\frac{62}{7}$
5. $\frac{36}{5}$
6. $\frac{59}{16}$
7. $\frac{171}{7}$
8. $\frac{12034}{25}$
9. $\frac{3086}{15}$
10. $\frac{1369}{8}$
11. $\frac{49}{16}$
12. $\frac{49}{16}$
13. $\frac{705}{100}$
14. $\frac{705}{100}$
15. $\frac{473000}{1000}$
16. $\frac{1215}{100}$
17. $\frac{174}{25}$
18. $\frac{537001}{1000}$

Art. 79.—(p. 111.)

1. Performed.
2. 8
3. $13\frac{7}{8}$
4. $167\frac{1}{5}$
5. $66\frac{3}{11}$
6. $37\frac{5}{13}$
7. $52\frac{4}{15}$
8. $30\frac{26}{35}$
9. $26\frac{3}{17}$
10. $8\frac{324}{1000}$
11. $70\frac{8}{15}$
12. $14\frac{1}{47}$
13. $30\frac{7}{100}$
14. $159\frac{2}{3}$
15. 78
16. $52\frac{7}{100}$

Art. 80.—(p. 112.)

1. Performed.
2. $606\frac{1}{3}$
3. $483\frac{3}{4}$
4. $355\frac{1}{13}$
5. $888\frac{6}{7}$
6. $3065\frac{5}{11}$
7. 8995
8. 27291
9. $69296\frac{43}{51}$
10. Performed.
11. $4\frac{3}{8}$
12. 4.
13. $8\frac{3}{7}$
14. $23\frac{6}{17}$
15. $93\frac{1}{8}$
16. $150\frac{3}{8}$
17. Performed.

18. $2\frac{4}{7}$
19. 3.
20. $2\frac{10}{13}$
21. $3\frac{4}{26}$
22. $22\frac{2}{3}$
23. 19.
24. 31.
25. $17\frac{8}{26}$
26. $21\frac{16}{17}$
27. $\frac{4}{26}$
28. $\frac{53}{166}$
29. $\frac{226}{825}$
30. $\frac{109}{755}$
31. $74\frac{10}{12}$
32. $2\frac{3}{4}$
33. $4\frac{1}{3}$
34. $39\frac{4}{5}$
35. $326\frac{326}{527}$
36. $\frac{425}{445}$
37. $487\frac{7}{25}$
38. Performed.
39. $17\frac{5}{8}$
40. $\$107\frac{13}{16}$
41. $\$696\frac{4}{5}$
42. $1491
43. $204\frac{12}{13}$ miles.
44. $787.25
45. $1649\frac{7}{12}$ sq. ft.
46. Performed.
47. 20 coats.
48. $3\frac{15}{24}$ days.
49. 59 quarter eagles.
50. $285\frac{3}{9}$ nails.

Art. 85.—(p. 117.)

1. Performed.
2. $\frac{2}{5}$.
3. $\frac{3}{4}$.
4. $\frac{5}{6}$.
5. $\frac{5}{7}$
6. $\frac{3}{4}$
7. $\frac{1}{3}$
8. $\frac{27}{28}$
9. $\frac{12}{25}$
10. $\frac{2}{3}$
11. $\frac{1}{3}$
12. $\frac{7}{11}$
13. $\frac{19}{25}$
14. $\frac{49}{51}$
15. $\frac{12}{31}$
16. $\frac{2}{3}$.
17. $\frac{13}{18}$
18. $\frac{19}{25}$
19. $\frac{17}{19}$
20. Performed.
21. $\frac{21}{32}$
22. 1.
23. $\frac{3}{5}$
24. $\frac{1}{2}$
25. $\frac{1}{6}$
26. $\frac{3}{45}$
27. $\frac{2}{5}$
28. $\frac{1}{12}$.
29. $\frac{28}{45}$
30. $\frac{7}{95}$
31. $\frac{2}{1485}$
32. $\frac{21}{256}$
33. $\frac{33}{1216}$
34. $\frac{11921}{82865}$

Art. 86.—(p. 119.

1. Performed.
2. $1382\frac{2}{5}$
3. $1262\frac{4}{7}$
4. $2651\frac{7}{8}$
5. $3371\frac{5}{11}$
6. $388\frac{2}{7}$
7. 5786.
8. $2466\frac{6}{11}$
9. $1086\frac{4}{5}$
10. $470\frac{10}{21}$
11. Performed.
12. $5622\frac{3}{5}$.
13. $2385\frac{6}{7}$

14. $7268\frac{3}{4}$
15. $11449\frac{1}{2}$.
16. $49493\frac{1}{3}$
17. $279126\frac{5}{16}$
18. $75434\frac{1}{17}$
19. $382899\frac{7}{11}$
20. Performed.
21. 18.75
22. 11.349
23. 3.92048
24. .0625
25. 3.02778
26. .000001
27. 44.46
28. 62.5
29. 1688.96
30. 1.17194
31. 3.3152
32. 4.012009

Art. 87.—(p. 121.)

1. Performed.
2. Performed.
3. $\frac{1}{2}$
4. $\frac{147}{256}$
5. $\frac{9}{16}$
6. $\frac{4}{15}$
7. $\frac{15}{28}$
8. $\frac{27}{50}$
9. $1\frac{1}{16}$
10. $\frac{1}{4}$
11. $\frac{8}{15}$
12. $\frac{5}{9}$
13. $\frac{9}{11}$
14. $\frac{2}{5}$
15. 1.
16 4.
17. $\frac{1}{2}$
18. $\frac{11}{24}$
19. $5\frac{17}{20}$
20. $1\frac{8}{27}$
21. $2\frac{126}{1485}$
22. $\frac{1}{10}$

Art. 88.—(p. 122.)

1. Performed.
2. .5625
3. .370370
4. .56
5. .421052
6. .53125
7. .833333
8. .666666
9. .0032
10. .075
11. .35
12. .928571
13. .807692

Art. 89.—(p. 122.)

1. Performed.
2. 11 s. 1 d. $1\frac{1}{3}$ qr.
3. 2 qt. 1 pt. $1\frac{1}{3}$ gi.
4. 6 da.
5. 6 cd. ft. 6 cu. ft. $691\frac{1}{5}$ cu. in.
6. 2 R. 36 sq. rd. 11 sq. yd.
7. 9 cwt. 9 lb. 1 oz. $7\frac{3}{11}$ dr.
8. 6 fur. 7 rd. 1 yd. 1 ft. 6 in.
9. 47′ $46\frac{2}{3}$″.
10. Performed.
11. 9 s. 2 d. 1.12 far.
12. 7 cwt. 14 lb. 6 oz. 6.4 dr.
13. 12 h. 46 m. 4.8 sec.
14. 2 rds. 3 yd. 1 ft. 8.6208 in.
15. 7 sq. rd. 8 sq. yd. 8 sq. ft
84.384 sq. in.
16. 1256.32512 cu. in.
17. 1 pk. 7 qt. 1.6 gi.
18. 4 ℥. 6 ʒ. .96 gr.
19. 2 ft. 7.68 in.
20. 30 sq. rd. 4 sq. ft. 51.264 sq. i

Art. 90.—(p. 124.)

12. $\frac{3}{19}$
13. $\frac{1}{5}$
14. $\frac{1}{5}$
15. $\frac{3}{4}$
16. $\frac{3}{4}$
17. $\frac{3}{5}$
18. Performed.
19. Omitted.
20. $\frac{129}{89}$
21. $\frac{2}{3}$
22. $\frac{7}{5}$
23. $\frac{1}{20}$
24. $\frac{3}{5}$
25. $\frac{73}{75}$
26. $\frac{43}{58}$
27. $\frac{2}{3}$
28. $\frac{7}{5}$
29. $\frac{1}{100}$
30. $\frac{25}{2}$
31. $\frac{31}{7}$
32. $\frac{34}{1567}$
33. $\frac{3}{11}$
34. $\frac{1676}{2259}$
35. $\frac{4437873}{6048000}$
36. $\frac{6048000}{1343647}$
37. $\frac{280043}{409600}$
38. Performed.
39. $\frac{5}{9}$
40. $\frac{2}{3}$
41. $\frac{6}{7}$
42. $\frac{4}{5}$
43. $\frac{8}{11}$
44. $\frac{5}{11}$
45. $\frac{17}{32}$
46. $\frac{43}{54}$
47. Performed.
48. .4595
49. .3572
50. .076
51. .00276
52. .1824
53. .00568
54. .475
55. .396
56. .0005
57. .1876

Art. 91.—(p. 127.)

1. Performed.
2. $652\frac{1}{3}$
3. 3.24
4. 3.807
5. $385\frac{7}{9}$
6. 3.6
7. $1.86\frac{12}{13}$
8. 3.696
9. $404\frac{4}{7}$
10. Performed.
11. "
12. $\frac{35}{48}$
13. $\frac{1}{4}$
14. $\frac{4}{9}$
15. $\frac{1}{6}$
16. $\frac{2}{3}$
17. $2\frac{4}{5}$
18. 24
19. $29\frac{4}{15}$
20. $\frac{35}{72}$
21. $\frac{64}{297}$
22. $2\frac{221}{432}$
23. $1\frac{43}{45}$
24. $2\frac{2}{3}$
25. $115\frac{1}{2}$
26. $103\frac{1}{7}$
27. $797\frac{41}{88}$
28. $\frac{1}{4}$
29. $\frac{5}{24}$
30. 16
31. $\frac{1}{576}$
32. 1

Art. 92.—(p. 129).

1. Performed.
2. .09
3. .0315
4. .0625
5. 3.024
6. .00018
7. .000025
8. .93068
9. 3372.72
10. 16.8
11. .000168
12. .168
13. 2481.4
14. .015625
15. 10.
16. 253.62805
17. 2.744
18. .126
19. 9.5557
20. 625
21. 120530.51457253041

Art. 93.—(p. 129).

1. Performed.
2. $8.46
3. $124\frac{1}{6}$ lb.
4. $\$\frac{35}{72} = \$.486\frac{1}{9}$
5. $\$68\frac{16}{45} = \$68.35\frac{5}{9}$
6. $5.886
7. $100.375
8. 1.29492 tons.
9. $\$5\frac{1}{8} = \$5.125$
10. $592
11. $441.925
12. $\$15\frac{23}{63} = \$15.365$
13. $42.50
14. $89.25 = Joseph's.
    $59.50 = Edward's.
15. $2612.25 gain.
16. $37.422 for first lot.
    $96.572 " second lot
    $133.994 for both.
17. $16.398
18. $5\frac{5}{8}$ bu.
19. $550\frac{1}{3}$ sq. ft.
20. $\$2\frac{19}{48} = \$2.396$.
21. $\$836\frac{57}{128} = \$836.445$.
22. $\$194.58\frac{1}{3}$ paid by 1st.
    $\$389.16\frac{2}{3}$ " 2d.
    $291.875 " 3d.
23. $3730.60
24. $612.134
25. $62.267
26. $91.373
27. 390 bu. 3 pk. 2 qt. 2 gi.
28. $58162\frac{1}{2}$ sq. in.
29. $6\frac{7}{8}$ tons, cost $\$128\frac{29}{32} = \$128.906$

Art. 94.—(p. 131.)

1. Performed.
2. 783.
3. 5270
4. 5060
5. $11\frac{1}{5}$
6. Performed.
7. "
8. 132
9. $711\frac{3}{5}$
10. $997\frac{4}{71}$
11. $958\frac{8}{9}$
12. 957
13. 1
14. $486\frac{2}{3}$
15. $\frac{8}{9}$
16. $19\frac{1}{8}$
17. $4\frac{13}{60}$
18. $\frac{9}{10}$
19. 1
20. $5\frac{3}{5}$
21. $\frac{216}{275}$
22. Performed.
23. 436 lb.
24. $2751.03
25. $22.24

26. $47.437
27. $7.50
28. $\$16\frac{7}{36} = \$16.194$
29. $15.20
30. $\$6\frac{19}{54} = \$6.352$
31. $\$1\frac{29}{35} = 1.828$
32. $\$26\frac{1}{14} = \$26.071$
33. $14\frac{2}{5}$ bu.
34. $25\frac{1}{5}$ lb.
35. $11820
36. $1250, sh. 2d mate.
$\$1666\frac{2}{3}$, " 1st "
$2500, " of Capt.
37. $\$11\frac{2}{5} = \$11.40$

Art. 95.—(p. 134.)

1. Performed.
2. "
3. 6
4. 28
5. 72
6. $2\frac{2}{3}$
7. 8
8. $2\frac{1}{4}$
9. 80
10. 630
11. 46000
12. Performed.
13. "
14. $\frac{9}{20}$
15. $\frac{9}{14}$
16. $\frac{10}{11}$
17. $1\frac{1}{13}$
18. $1\frac{1}{9}$
19. $1\frac{5}{28}$
20. $\frac{7}{9}$
21. $\frac{6}{7}$
22. 2.
23. Performed.
24. Performed.
25. $\frac{3}{4}$
26. $\frac{5}{6}$
27. $\frac{6}{7}$
28. $2\frac{2}{13}$
29. $2\frac{11}{12}$
30. 5
31. $\frac{264}{355}$
32. $\frac{105}{134}$
33. $1\frac{1}{3}$
34. $\frac{5}{6}$
35. $\frac{35}{72}$
36. $1\frac{59}{216}$
37. $\frac{43}{121}$
38. $\frac{27}{32}$
39. $\frac{1}{36}$
40. $\frac{8}{117}$
41. $7\frac{1}{5}$ lots.
42. 6 yd.
43. $\$3\frac{1}{3}, = \$3.333$
44. $23\frac{1}{3}$ bu.
45. $10\frac{35}{46}$ bu.
46. $\$16\frac{4}{5} = \$16.80$
47. $17\frac{5}{28}$ bbl.
48. $35\frac{5}{7}$ yd.
49. $\$537\frac{5}{8} = \$537.625$

Art. 96.—(p. 136.)

1. Performed.
2. 5.
3. 50
4. 500
5. 5000
6. .5
7. 5
8. 50
9. 500
10. .05
11. .5
12. 5
13. 50.
14. .005
15. .05
16. .5
17. 5

18. 80.
19. 6000.
20. .2
21. 5.
22. 10000
23. .0218
24. 8.
25. .004
26. 8000.
27. 1.
28. $2\frac{8}{21} = 2.380952$
29. .00000002
30. 18.

Art. 97.—(p. 137.)

1. Performed.
2. $1\frac{1}{6}$
3. $\frac{4}{5}$
4. $\frac{14}{75}$
5. $\frac{7}{10}$
6. $\frac{16}{405}$
7. $\frac{25}{32}$
8. 275
9. 1000
10. Performed.
11. $\frac{8}{9}$
12. $\frac{458}{561}$
13. $\frac{917}{1065}$
14. $\frac{91}{135}$
15. 12.5
16. $2\frac{1}{8}$
17. $\frac{36}{175}$
18. $\frac{3}{40}$
19. $\frac{7}{20}$
20. $\frac{23}{400}$
21. $\frac{369}{50000}$
22. $6\frac{527}{900}$
23. Performed.
24. $2\frac{37}{160}$
25. $3\frac{3}{64}$
26. $\frac{1096}{4455}$
27. $\frac{1363}{9800}$
28. $1\frac{3}{5}$
29. $7\frac{58}{81}$
30. $\frac{1}{1750000000}$
31. 1687500

Art. 98.—(p. 139.)

1. Performed.
2. Performed.
3. $\frac{16}{18}$
4. $\frac{12}{51}$
5. $\frac{3}{5\frac{1}{2}}$
6. $\frac{9}{9\frac{3}{4}}$
7. $\frac{42}{51}$
8. $\frac{125}{325}$
9. Performed.
10. Performed.
11. $\frac{16}{20}$
12. $\frac{24}{28}$
13. $\frac{20}{38}$
14. $\frac{5\frac{1}{4}}{9}$
15. $\frac{5\frac{1}{3}}{10}$
16. $\frac{18}{51}$
17. $\frac{9}{12}$ and $\frac{8}{12}$
18. $\frac{21}{28}$ and $\frac{7}{28}$
19. $\frac{7\frac{1}{9}}{8}$ and $\frac{6\frac{2}{3}}{8}$
20. $\frac{4\frac{4}{5}}{12}$ and $\frac{9}{12}$
21. $\frac{32}{56}$ and $\frac{35}{56}$
22. $\frac{56}{72}$ and $\frac{66}{72}$

Art. 99.—(p. 140.)

1. Performed.
2. $\frac{3}{4}$ and $\frac{1}{4}$
3. $\frac{4}{6}$ and $\frac{3}{6}$
4. $\frac{9}{12}$ and $\frac{8}{12}$
5. $\frac{10}{12}$ and $\frac{9}{12}$

6. $\frac{35}{40}$ and $\frac{28}{40}$
7. $\frac{32}{36}$ and $\frac{21}{36}$
8. $\frac{1}{2}$ and $\frac{1}{2}$
9. $\frac{7}{8}$ and $\frac{6}{8}$
10. $\frac{2}{3}$ and $\frac{2}{3}$
11. $\frac{24}{30}$, $\frac{20}{30}$, and $\frac{15}{30}$
12. $\frac{8}{12}$, $\frac{9}{12}$, and $\frac{10}{12}$.
13. $\frac{77}{84}$, $\frac{78}{84}$, and $\frac{32}{84}$
14. $\frac{15}{72}$, $\frac{34}{72}$, $\frac{44}{72}$
15. $\frac{6}{12}$, $\frac{4}{12}$, $\frac{7}{12}$
16. $\frac{9}{14}$, $\frac{9}{14}$, $\frac{10}{14}$.
17. $\frac{3}{4}$, $\frac{3}{4}$, $\frac{3}{4}$.
18. $\frac{50000}{210000}$, $\frac{90000}{210000}$, $\frac{3}{210000}$
19. $\frac{45}{60}$, $\frac{54}{60}$, $\frac{45}{60}$, $\frac{50}{60}$.
20. $\frac{320}{1560}$, $\frac{819}{1560}$, $\frac{546}{1560}$
21. .600000, .750000, 1.028900, .000004
22. $\frac{68}{1200}$, $\frac{930}{1200}$, $\frac{84}{1200}$, $\frac{115}{1200}$

Art. 100.—(p. 141.)

1. Performed.
2. Performed.
3. Performed.
4. $1\frac{1}{4}$
5. $\frac{5}{6}$
6. $1\frac{1}{15}$
7. $1\frac{7}{12}$
8. $\frac{1}{8}$
9. $1\frac{19}{30}$
10. $\frac{3}{20}$
11. $\frac{13}{36}$
12. $\frac{5}{56}$
13. $8\frac{5}{12}$
14. $8\frac{1}{3}$
15. $\frac{79}{240}$
16. $\frac{1}{90}$
17. $\frac{1}{15}$
18. $3\frac{19}{30}$
19. $6\frac{3}{5}$
20. 1
21. $1\frac{5}{54}$
22. $8\frac{1}{20}$
23. $7\frac{1}{13}$
24. $10\frac{15}{16}$
25. $37\frac{1}{72}$
26. $\frac{7}{18}$
27. $1\frac{3}{56}$
28. $3\frac{5}{24}$
29. $1\frac{17}{22}$
30. $5\frac{1}{4}$
31. $\frac{59}{72}$
32. $\frac{1}{64}$
33. $\frac{374}{729}$
34. $54\frac{133}{360}$
35. $\frac{13}{16}$
36. $\frac{86537}{88179}$
37. $5\frac{273}{2750}$
38. 18 s. $2\frac{2}{3}$ far.
39. 3 fur. 13 rd. 2 yd.
40. 3 qts. 1 pt. $2\frac{14}{15}$ gi.
41. 10 oz. 18 dwt. 3 gr.
42. 9 ℥. $2\frac{2}{7}$ gr.
43. 1 bu.
44. 1 R. 4 sq. rd. 23 sq. yd. 3 sq. ft. $74\frac{273607}{313950}$ sq. in.

Art. 101.—(p. 144.)

1. $112\frac{5}{12}$ yds.
2. $\$1\frac{1}{60}$
3. $\$1.87\frac{1}{2}$
4. $\$38\frac{1}{3}$
5. $\frac{17}{72}$
6. $\frac{1}{18}$
7. $\$\frac{35}{48} = \$.729$
8. $\$4\frac{2}{5}$
9. $13\frac{1}{2}$ cu. ft. cost $88.
10. $\frac{5}{18}$
11. $\frac{1}{4} = \$.25$
12. $.60
13. 7560.
14. 60 days.
15. $14.50
16. $8
17. 9 tons.

18. $4304.20 = sum spent.
$6886.72 = val. of estate.
19. $29.10
20. $1\frac{1}{24}$
21. $2439.76, son's share.
$1219.88, daughter's share.
22. $13500 = 1st.
$4500 = 2d.
23. $1.25 for apples.
$3.75 for pears.
24. $.50 for muslin.
$1.75 for silk.
25. $559845.075
26. $.9375
27. A pays $\$8333\frac{1}{3}$.
B pays $\$9259.25\frac{25}{27}$.
C pays $\$19444.44\frac{4}{9}$.
D pays $\$12962.96\frac{8}{27}$.
28. £4. 16 s. 8 d. 3 qr.
29. 40 A. 2 R. 33 sq. rds.
30. 2 fur. 28 rd. 4 yds. 2 ft. 8 in.
31. 16 s. 7 d. $2\frac{17}{30}$ far.
32. 1 £. 14 s. 11 d. 2 qr.
33. $11\frac{1}{4}$ miles.
34. $\$124.57\frac{1}{7}$
35. $41.005
36. $\$21\frac{23}{36}$
37. $.30
38. $\$4\frac{3}{5}$
39. $10\frac{1}{2}$
40. $\$9.79\frac{31}{36}$
41. $\frac{19}{90}$ in 1 day.
$4\frac{14}{19}$ days.
42. $2\frac{8}{11}$ days.
43. $8\frac{4}{37}$ days.
44. $10.744
45. $55.125
46. 200 miles.
47. $9498.
48. $446.76
49. .0769
50. $1\frac{1}{6}$
51. $\$7\frac{9}{16} = \$7.56\frac{1}{4}$
52. $25\frac{3}{5}$ melons.
53. $\$4\frac{2}{3} = \$4.66\frac{2}{3}$
54. $22\frac{6}{7}$ melons.
55. $\$4\frac{1}{6} = \$4.16\frac{2}{3}$
56. Performed.
57. $17\frac{37}{39}$ days.
58. $3\frac{23}{39}$ acres.
59. $7\frac{87}{175}$ days.
60. $191\frac{13}{25}$ days.
61. $\$754\frac{2}{7} = \$754.28\frac{4}{7}$
62. Performed.
63. $\$38\frac{19}{40} = \$38.475$
64. 1400 cherries.
65. $4\frac{4}{15}$ problems.
66. 4 horses.
67. 1.86165
68. 143.2 lots.
69. 100 men.
70. $.1688
71. $6.581

Art. 102.—(p. 150.)

1. Performed.
2. 36 sq. ft. 3′ 5″ = 36 sq. ft. 41 sq. in.
3. 173 sq. ft. 5′ 4″ = 173 sq. ft. 64 sq. in.
4. 127 sq. ft. 11′ 10″ = 127 sq. ft. 142 sq. in.
5. 118 sq. ft. 7′ 10″ = 118 sq. ft. 94 sq. in.
6. 123 sq. ft. 3′ 6″ = 123 sq. ft. 42 sq. in.
7. 76 cu. ft. 1′ 11″ 6‴ — 76 cu. ft. 282 cu. in.
8. 1027 cu. ft. 2′ 10″ 8‴ = 1027 cu. ft. 416 cu. in.
9. $\$27.89\frac{1}{16}$
10. $27\frac{19}{24}$ sq. yd.
11. $35\frac{83}{324}$ yd.
12. $72\frac{857}{1296}$ sq. yd.
13. 8406 cu. ft. 1560 cu. in.
14. $36344\frac{5}{8}$ bricks.

Art. 103.—(p. 153.)

1. Performed.
2. 4 : 3.
3. 3 : 4.
4. 1 : 3.
5. 9 : 7.
6. 2 : 3.
7. 9 : 5.
8. Performed.
9. 4 : 5.
10. 16 : 7.
11. 3 : 4.
12. 30 : 1.
13. 1 : 10.
14. 150 : 1.
15. Performed.
16. 5 : 14.
17. 5 : 12.
18. 250 : 3.
19. 15 : 1.

Art. 104.—(p. 155.)

1. Performed.
2. Performed.
3. Performed.
4. 16.
5. $5\frac{2}{5}$
6. $1\frac{3}{7}$
7. $7\frac{1}{2}$.
8. .0036
9. $\frac{4}{5}$
10. $106\frac{2}{3}$
11. 48
12. .00045
13. .001

Art. 105.—(p. 158.)

1. Performed.
2. Performed.
3. $200.
4. $6\frac{2}{3}$ tons.
5. $1.75
6. 46 lb.
7. \$$\frac{16}{27}$ = \$.592$\frac{16}{27}$
8. $328.88
9. $1\frac{11}{14}$ yd.
10. $6\frac{13}{27}$ bu.
11. $22.40
12. 9 men.
13. 64 days.
14. 4 men.
15. 12 mo.
16. 72 men.
17. \$.09$\frac{153}{175}$
18. $5\frac{7}{36}$ yds.
19. $10\frac{1}{8}$ da.
20. 11 da.
21. $23\frac{1}{25}$ bags.
22. $15\frac{3}{10}$ yd.
23. $49\frac{7}{15}$ rd.

Art. 106.—(p. 160.)

1. Performed.
2. $302.28
3. 18 days.
4. 11 men.
5. 6 men.
6. $73.28
7. 8 days.
8. $823.20
9. $73\frac{7}{11}$ yd.
10. $1306\frac{2}{3}$ lb.
11. \$$449\frac{7}{32}$ = \$449.21$\frac{7}{8}$
12. $100.
13. 30 days.
14. $78\frac{3}{4}$ oz.
15. 120 tiles.
16. 7 house-lots.
17. \$$4680\frac{15}{19}$ = \$4680.789$\frac{9}{19}$
18. $14\frac{62}{117}$ pieces.
19. $1\frac{319}{896}$ days.

Art. 109.—(p. 164.)

1. $6.
2. $3.28
3. $.43
4. $.08
5. $.057
6. $8.972
7. $.61

8. $.569
9. $3.287
10. Performed.
11. $16.993
12. $41.732
13. $2319.12
14. $18.826
15. $1.462
16. $127.06
17. $1.644
18. $19.714
19. $.218
20. $53.386
21. $20.271
22. $29.697
23. Performed.
24. $7.647
25. $6.835
26. $53.861
27. $6.894
28. $19.224
29. $14.843
30. $5.125
31. $24.079
32. $57.98
33. $161.583.
34. Performed.
35. $14.497
36. $20.619
37. $22.002
38. $4.771
39. $4.749
40. $11.534
41. $120.918
42. $32.323
43. $172.65
44. $232.50
45. $17.791
46. $23.792
47. $8.357
48. $3.488
49. $369.446
50. $148.088
51. $4.068
52. $2.736
53. $8.963
54. $245.503
55. $57.409
56. $751.017
57. $266.668
58. $972.142
59. $2358.057
60. $654.898
61. 420.242
62. $6190.659
63. $357.531
64. $94.918
65. $3030.268
66. $148.748

Art. 110.—(p. 168.)

1. Performed.
2. $84.28
3. $30.36
4. $12.20
5. $6.082
6. $4.35
7. $3.12
8. $3.719
9. $5.48
10. $1.145
11. $5.02
12. $4.01
13. $4.67
14. $5.97
15. $.455
16. $214.50
17. $90.625
18. $192
19. $.436
20. $8.732
21. $5.06
22. $19.45
23. $.92
24. Performed.
25. $5.784
26. $22.80
27. $71.80

28. $1.896
29. $.054
30. $7.225
31. $.302
32. $.226
33. $1.19
34. $.102
35. $1.674
36. $.97
37. $.01
38. $.448
39. $.186
40. $.08
41. $19.08
42. $4.18
43. $1.589
44. $.715
45. Performed.
46. Performed.
47. $2.145
48. $5.713
49. $35.142
50. $62.847
51. $116.542
52. $35.854
53. $34.053
54. $4.836
55. $4.936
56. $69.193
57. $12.273
58. $59.798
59. $720.93
60. $540.937
61. $1967.756
62. $94.415
63. $506.529
64. $262.673
65. $596.388
66. $898.565
67 $29679.187
68. $6297.814
69. $320.215
70. $385.619

Art. 111.—(p. 171.)

1. Performed
2. "
3. "
4. "
5. 10 yr. 2 mo. 7 da.
6. 4 yr. 10 mo. 24 da.
7. 4 yr. 8 mo. 19 da.
8. 3 yr. 2 mo. 13 da.
9. 1 yr. 1 mo. 28 da.
10. 1 yr. 2 mo.
11. $259.50
12. $77.993
13. $21.143
14. $131.437
15. $358.
16. $357.
17. $360.
18. $6.516
19. $1054.544.
20. $280.517
21. $90.106
22. $69985.721
23. $1885.73
24. $95.603
25. 2490.507
26. $539.265
27. $1149.118 ? 1 48.53
28. $126.34
29. $44.224

Art. 112.—(p. 173.)

1. Performed.
2. $79.498
3. $751.528
4. $21.47
5. $1.721
6. 80.971
7. $1.794
8. $567.195
9. 4027.50
10. $9432.021

11. $110.532
12. $375.824
13. Performed.
14. “
15. $19.215
16. $54.579
17. $20.734
18. 259.20
19. $19.817
20. $9.52
21. $186.434
22. $86.159
23. $45.011
24. $221.286
25. $49.245
26. $40.59.
27. $307.145
28. $693.679

Art. 113.—(p. 175.)

1. Performed.
2. $1101.31
3. $35.553
4. $178.293
5. $1036.089
6. $1853.647
7. Performed.
8. $340.193
9. $2226.288
10. $2141.687
11. $1110.699
12. $2959.908
13. $202.758

Art. 115.—(p. 181.)

1. Performed.
2. $499.04
3. $649.387
4. $450.525
5. $263.886

Art. 116.—(p. 184.)

1. Performed.
2. $118.342
3. $92.472
4. $255.963

Art. 117.—(p. 186.)

1. Performed.
2. $795.60
3. $144.997
4. $393.996.
5. $114.328 111+.
6. $242.375
7. $804.323
8. Performed.
9. “
10. $959.84 due Jan. 10, 1857.
11. $968.157 due March 4, 1858.
12. $195.631 due March 22, 1856.
13. $.865
14. $5.043

Art. 118.—(p. 189.)

1. Performed.
2. “
3. 1 yr. 8 mo.
4. 1 yr. 1 mo. 1 da.
5. 5 yr. 7 mo. 28 da.
6. 6 mo. 26 da.
7. 1 yr. 5 mo. 23 da.
8. 2 yr. 1 mo. 19 da.
9. 4 yr. 2 mo.
10. 1 yr. 6 mo.

Art. 119.—(p. 190.)

1. Performed.
2. 4 mo. 20 da.
3. 4 mo. 21 da.
4. 7 mo. 2 da.
5. 22 da.
6. Performed.
7. Aug. 10.
8. May 18.
9. 9 mo.
10. 16 mo. 21 da.
11. 14 mo.

12. 2 mo. 11 da.
13. $982.154
14. $4097.
15. I ought to pay $2079.40. The equated time is Oct. 7.

Art. 120.—(p. 192.)

1. Performed.
2. Nov. 22.
3. Feb. 5.
4. Jan. 31.
5. $1599.40 due Gorham.

Art. 121.—(p. 194.)

4. $320.
5. $466.50
6. $426.
7. $1766.523.
8. $236.
9. $480.
10. $335.52.

Art. 122.—(p. 196.)

1. Performed.
2. $1243.823
3. $430.
4. $624.42
5. $594.059
6. $970.874
7. $200.
8. $142.046
9. $601.292
10. $1376.077
11. Performed.
12. $7.50
13. $15.144
14. $37.163
15. $14.347
16. $30.335
17. $22.323
18 $76.575
19. $62.16
20. $5.718

4

Art. 123.—(p. 197.)

1. Performed.
2. $787.60
3. $1.116
4. $1.748
5. Performed.
6. $639.713
7. $76.313
8. $970
9. Performed.
10. $2031.488
11. $819.602
12. $1276.596
13. Performed.
14. $302.553
15. $542.553
16. $710.82, face of note, $18.14 less money.

Art. 124.—(p. 200.)

1. Performed.
2. 6 per ct.
3. 6 per ct.
4. 9 per ct.
5. 4½ per ct.
6. 7½ per ct.

Art. 125.—(p. 200.)

1. Performed.
2. $57.577
3. $262.80
4. $947.25
5. $855
6. 64.80
7. $684.00
8. $648.00

Art. 126.—(p. 201.)

1. Performed.
2. "
3. { $240.187 commis.
   $3035.093, sum remitted.
4. { $51.00 commis.
   $1551.00 total.

5. { $60.816, commis.
$2979.964, should pay.
6. { $129.319, commis.
$5302.069, sum remitted.
7. Performed.
8 { $8312.195, cost.
$207.805, commis.
9. { $1251.50, cost.
$.125.15, commis.
10. 1792 bu.
11. 11764$\frac{12}{17}$ lb.

Art. 127.—(p. 203.)

1. Performed.
2. $68.50
3. $1514
4. 2840.205
5. $308.811
6. { $227.048, cost.
$2272.952, gain.

Art. 128.—(p. 204.)

1. Performed.
2. $7283.333
3. $8700.
4. 1st. at discount, 2d and 3d at premium.
5. 4.83\frac{1}{3}$
6. 4.84\frac{4}{9}$
7. $1178.496
8. $5598.187

Art. 129.—(p. 207.)

1. Performed.
2. "
3. $1554
4. $1863
5. $570.625
6. $100
7. $182.10
8. $218.75.
9. 8 shares.
10. 17 shares.
11. $250.233
12. $125.36
13. $600.
14. { $3375, par value.
$2700, price paid.
$3037.50, price received.

Art. 130.—(p. 210.)

1. Performed.
2. $8.625
3. $10.50
4. $2.67
5. Performed.
6. $4.40 loss.
7. $1.562 gain.
8. 6.25 loss.
9. $1.044 gain.
10. $31.25 gain.
11. $3.84 loss.
12. $1.00 loss.
13. Performed.
14. 6 lb.
15. 25 lb.
16. $2.482
17. { $746.75 gain.
$3733.75 sum received.
18. $.10$\frac{1}{2}$
19. Performed.
20. 14$\frac{2}{7}$ per ct. loss.
21. 33$\frac{1}{3}$ " "
22. 20 " "
23. 25 per ct. gain.
24. 25 " "
25. 20 per ct. loss.
26. 125 per ct.
27. 80 per ct.
28. 105 per ct.
29. 95$\frac{5}{21}$ per ct.
30. 25 per ct. gain.
31. 33$\frac{1}{3}$ per ct. loss.
32. 8$\frac{1}{3}$ per ct. gain.
33. 9$\frac{1}{11}$ per ct. loss.
34. 50 per ct. gain.
35. 100 per ct. loss.

36. Performed.
37. $11\frac{1}{9}$ per ct. loss.
38. $9\frac{1}{11}$ per ct. gain.
39. 25 per ct. loss.
40. $16\frac{2}{3}$ per ct. gain.
41. $33\frac{1}{3}$ per ct. gain.
42. 50 per ct. gain.
43. Performed.
44. 20 per ct. loss.
45. $33\frac{1}{3}$ per ct. loss.
46. $16\frac{2}{3}$ per ct. loss.
47. $17\frac{11}{17}$ per ct. gain.
48. 20 per ct.
49. $6\frac{2}{3}$ per ct.
50. Performed.
51. \$20
52. \$.08
53. \$3
54. \$36.40
55. \$106
56. \$94
57. \$3.09
58. \$2.91
59. \$108.50
60. \$77.50
61. Performed.
62. “
63. \$1440.
64. \$2160
65. \$11.625
66. $\$66.66\frac{2}{3}$
67. $9\frac{1}{11}$ per ct.
68. $34\frac{6}{41}$ per ct.
69. \$20.00
70. \$225.00
71. Performed.
72. \$93.99
73. \$3.96
74. \$1138.50
75. \$449.79
76. \$525
77. $\$6\frac{1}{4}$ per ct.
78. $16\frac{2}{3}$ per cent.
79. \$4.00
80. \$7.237

Art. 131.—(p. 215.)

1. \$375 = Jones's.
   \$225 = Brown's.
   \$337.50 = Smith's.
2. \$270.27 = A's.
   \$324.324 = B's.
   \$405.405 = C's.
3. \$2625 = Rogers's.
   \$2775 = Goodwin's.
   \$2100 = Clarke's.
4. \$.25 on \$1.
   \$150 to Bradford.
   \$24.625 to Warren.
5. \$11.25 = A's share.
   \$10.00 = B's “
   \$12.90 = C's “
6. \$200 = A's.
   \$100 = B's.
7. \$300 = A's.
   \$450 = B's.
8. \$212.50 = A's.
   \$425 = B's.
   \$637.50 = C's.
9. \$647.92 = A's.
   \$161.98 = B's.
   \$323.96 = C's.
   \$809.90 = D's.
10. \$9600 = A's.
    \$9400 = B's.
11. \$5333.333 = A's.
    \$5666.667 = B's.
12. \$13520 = Adams's.
    \$11200 = Luther's.
    \$15280 = Hull's.
13. \$3020 = Adams's.
    \$3700 = Luther's.
    \$3280 = Hull's.

Art. 132.—(p. 217.)

1. Performed.
2. \$2057.143 = X's.
   \$1885.714 = Y's.
   \$2057.143 = Z's.

3. Each receives $1000.

4. $4307.692 = White's.
$3692.308 = Jackson's.

5. $11.881 = share of Robbins of Chase, and of Daggett.
$14.357 = Freeman's share.

6. If only gain is divided —
$2285.714 = Mason's.
$2938.776 = Loring's.
$2775.51 = Davis's.
If capital and gain are both divided —
$5285.714 = Mason's.
$7938.776 = Loring's.
$7275.51 = Davis's.

7. $1417.004 = A's.
$1053.036 = B's.
$629.96 = C's.

8. $8031.579 = Gould's.
$8468.421 = Austin's.

9. $3821.053 = Gould's.
$2678.947 = Austin's.

Art. 133.—(p. 119.)

1. $2\frac{1}{2}$ mills on a dollar.
$13.70 = A's tax.
$5.50 = B's "
$2.15 = C's "
$30.00 = D's "

2. $3\frac{1}{5}$ mills on a dollar.
$12.709 = W's tax.
$59.055 = X's "
$27.845 = Y's "
$2.405 = Z's "

Art. 136.—(p. 223.)

1. Performed.
2. 23.
3. 51.
4. 82.
5. 79.
6. 99.
7. 28.
8. 325.
9. 218.
10. 634.
11. 929.
12. 178.
13. 809.
14. 3213.
15. 2111.
16. 1846.
17. 5825.
18. 8607.
19. 9008.

Art. 137.—(p. 225.)

1. $\frac{12}{13}$.
2. $\frac{98}{99}$.
3. $\frac{223}{268}$.
4. $\frac{144}{397}$.
5. $\frac{2}{3}$ or $\frac{7}{9}$, &c.
6. $\frac{14}{15}$.
7. $\frac{7}{9}$.
8. $\frac{1221}{1327}$.
9. $\frac{355}{493}$.
10. .75
11. .05
12. .37802
13. 9.38083
14. 1.41421
15. 3.87298
16. 9.30215
17. 7.90886
18. .92625

Art. 139.—(p. 228.)

1. Performed.
2. 84.
3. 97.
4. 39.
5. 36.
6. [illegible]
7. [illegible]
8. [illegible]
9. 525.
10. 2187.

11. 5004.
12. 4739.
13. 1111.

Art. 140.—(p. 231.)

1. $\frac{7}{9}$
2. $\frac{5}{8}$
3. $\frac{3}{4}$, $\frac{7}{8}$, $\frac{15}{16}$, &c.
4. $\frac{2}{3}$, $\frac{3}{4}$, $\frac{7}{9}$, &c.
5. $\frac{7}{25}$, $\frac{3}{10}$, $\frac{23}{75}$, &c.
6. $\frac{45}{47}$, $\frac{91}{94}$, $\frac{136}{141}$, &c.
7. .84343
8. 2.05671
9. 18.14896
10. 1.25992
11. 1.68525
12. 3.91486
13. .04121
14. 1.47514
15. 8.16214

Art. 141.—(p. 232.)

1. 24 sq. ft.
2. 93½ sq. ft.
3. 26.906 sq. ft.
4. 9.9215 sq. ft.
5. 27.7128 sq. ft.
6. 73.1791 sq. sq. ft.
7. 162 sq. ft.
8. 89⅜ sq. ft.
9. 45 sq. ft.
10. 344½ sq. ft.
11. 2496 sq. ft.
12. 4489 sq. ft.
13. 113.0976 sq. ft.
14. 7854 sq. ft.
15. 201.0624 sq. ft.
16. 31416 sq. ft.
17. 93 ft.
18. 19.4679 ft.
19. 10 ft.
20. 174 ft.
21. 351 ft.
22. 24 ft.
23. 42.4264 ft.
24. 157.08 ft.
25. 11 ft.
26. 15.9154 ft.
27. 78.54 ft.
28. 1327326 sq. ft.
29. 198.9432 sq. ft.
30. 412.5286 sq. ft.
31. 10 ft.
32. 374.1657 ft.
33. 15.708 ft.
34. 14.9207
35. 63.8084 ft.
36. 15 ft.
37. 9 : 1
38. 51.1328
39. $900
40. 4 minutes.
41. Diameter of circle, 235.5041
Side of square, 208.7103
Sides of rectangle, 147.5804 and 295.1608
Base and altitude of triangle, 295.1608
Altitude of trapezoid, 208.7103

Art. 142.—(p. 238.)

1. Performed.
2. 25 ft.
3. 82.0156 ft.
4. Performed.
5. 15 ft.
6. 24 ft.
7. 51.9615 ft.
8. 43.5889 ft.
9. 1.4142 ft.
10. 80 miles.
11. 70.7106 ft.
12. 35.3553 ft.
13. 40 ft.
14. 14.1421 ft.
15. 35.3553 ft.
16. 53.1413 ft.
17. 420.2246 ft.

Art. 143.—(p. 239.)

1. 268.0832 cu. ft.
2. 523.6 cu. ft.
3. 135.943 cu. ft.
4. 16.8867 cu. ft.
5. 14.1372 cu. ft.
6. 58.905 cu. ft.
7. 100.5312 cu. ft.
8. 9.4248 cu. ft.
9. 170 cu. ft.
10. 300 cu. ft.
11. 324 cu. ft.
12. 58.1196 cu. ft.
13. 248.316 cu. ft.
14. 5.7588 ft.
15. 65.6342 sq. ft.
16. 113.0976 sq. ft.
17. 113.0976 sq. ft.
18. 45.7423 sq. ft.
19. 116.5782 sq. ft.
20. 54 lb.
21. 1000 spheres.
22. 381.1808 cu. in.
23. 913.1584 cu. in.

Art. 144.—(p. 243.)

1. 89
2. 20
3. $3\frac{3}{7}$.
4. 2.
5. 15
6. 9
7. 3, 5, 7, 9
8. 10, $9\frac{1}{2}$, 9, $8\frac{1}{2}$, 8, $7\frac{1}{2}$, 7, $6\frac{1}{2}$, 6.

Art. 145.—(p. 245.)

1. 222.
2. 585
3. $\left\{\begin{array}{l}\text{330, sum of terms.}\\ \text{43, last term.}\end{array}\right.$
4. $\left\{\begin{array}{l}\text{150, last term.}\\ \text{1920, sum of terms.}\end{array}\right.$
5. 5050
6. $\left\{\begin{array}{l}\text{6, number of terms.}\\ \text{2, com. dif.}\end{array}\right.$
7. $\left\{\begin{array}{l}\text{11, number of terms.}\\ \text{1, com. dif.}\end{array}\right.$
8. $\left\{\begin{array}{l}\text{17, last term.}\\ \text{1, com. dif.}\end{array}\right.$
9. $\left\{\begin{array}{l}\text{7, first term.}\\ \frac{1}{3}\text{, com. dif.}\end{array}\right.$

Art. 146.—(p. 246.)

1. 256
2. 27
3. $2\frac{26}{243}$.
4. 4.
5. $\frac{4}{5}$
6. 16, 80, 400, 2000, 10000.

Art. 147.—(p. 247.)

1. 511
2. $728\frac{8}{9}$
3. $\left\{\begin{array}{l}\text{19.3124, ratio.}\\ \text{68366.5688, sum of terms.}\end{array}\right.$
4. $\left\{\begin{array}{l}\frac{1}{3}\text{, ratio.}\\ \text{4840, sum of terms.}\end{array}\right.$
5. 16320
6. $\left\{\begin{array}{l}\text{2048, last term.}\\ \text{4094, sum of terms.}\end{array}\right.$

Art. 148.—(p. 248.)

1. Performed.
2. $2\frac{2}{3}$
3. 2.
4. $8\frac{1}{3}$
5. 3
6. $1\frac{1}{99}$
7. $\frac{6}{37}$
8. $1\frac{1}{9999}$
9. $\frac{4783}{9999}$

Art. 149.—(p. 249.)

1. Performed.
2. $.29\frac{1}{4}$
3. $\left\{\begin{array}{l}\text{\$.02 gain per gal.}\\ \text{\$20. \ \ `` on whole.}\end{array}\right.$

4. Performed.
5. Indefinite.
6. "
7. $16\frac{2}{3}$ gal.
8. 40 gal.
9. 10 lb.
10. Indefinite.
11. "
12. "

Art. 150.—(p. 252.)

1. $1210.50
2. 164 sq. ft. 78 sq. in.
3. 1.67705+
4. 1596
5. 545
6. 936, rem.
   $424\frac{1}{2}$, sub.
7. 300, sub.
   100 rem.
8. 144, sub.
   240, min.
9. 125 per ct.
10. $7\frac{13}{40}$
11. 6800 sq. ft.
12. $82.00
13. 1
14. 11.33\frac{1}{3}$
15. $620 for first.
    $372 " second.
16. 100
17. 33, multiplicand.
    24, multiplier.
18. $20 loss.
19. 45 m. from A to C
    31.3847 m. from A to D.
    20 m. from A to E.
20. $\frac{17}{81}$.
21. $10\frac{10}{11}$ days.
22. $11\frac{19}{31}$ days.
23. 5.625
24. 60
25. $1000
26. 20 per ct.
27. 23
28. 9642.85\frac{5}{7}$
29. $20, A's share.
    $25, B's "
    $30, C's "
30. Edward reaches it $2\frac{2}{3}$ h. before William.
31. 24 ft., longer pole.
    18 ft., shorter "
    42 ft., distance between their feet.
    42.4264 ft., distance between their tops.
32. 207.8692 cu. in.
33. 383.0298 cu. in.
34. 4.2171 gal.
35. Lost $4\frac{3}{8}$ per ct.
36. Gain on wine sold, 40 per ct.
    Loss on whole, $22\frac{2}{9}$ per ct.
37. 1333\frac{1}{3}$, cost.
    133\frac{1}{3}$, loss.
38. $\frac{459}{176000}$.
39. $\frac{1}{100}$.
40. $7198.068, cost.
    $143.961, commission.
    $107.971, insurance.
41. $557.035
42. $847.568
43. $13\frac{1}{3}$ h.
44. $400, Edward's share.
    266\frac{2}{3}$, Arthur's "
    333\frac{1}{3}$, Daniel's "
45. $50000, son's share.
    $25000, each daughter's sh.
46. $29\frac{257}{267}$ A. in northern lot.
    $32\frac{256}{267}$ A. in middle lot.
    $37\frac{21}{267}$ A. in southern lot.
47. 15 m. 4 days.
48. 33, 49, 44
49. 21.6 days.
50. 6 h.
51. 729 bales.
52. A. travels $3\frac{3}{7}$ m. per h.
    B. " $4\frac{4}{7}$ m. "

53. 13 mo. 19 da.
54.
55. Rate of current, $5\frac{1}{2}$ m. per h.
    $6\frac{6}{10}$ minutes.
56. 224 men.
57. 40, 28.2841, 8.787, 10.251.
58. $25\frac{1}{5}$ m.
59. 52 days.
60. $52, Lewis's share.
    $42, Herbert's "
61. 11993 minutes.
62. 600 and 400
63. $\frac{5}{343}$
64. $27.959 gain.
65. $50.
66. $335544.81
67. 14.142 ft.
68. $.$12\frac{1}{2}$, price of Coffee per lb.
    $.$31\frac{1}{4}$, price of Tea per lb.
69. $$533\frac{1}{3}$, A's profit.
    $1600, B's "
    $$2666\frac{2}{3}$, A's stock.
    $8000, B's "
70. $46000
71. $.50
72. $$1071\frac{3}{7}$
73. A pays $$37.48\frac{4}{7}$
    B pays $$26.51\frac{3}{7}$
74. 1296
75. 75 Acres.
    $60, price per Acre.
76. 12.8292 ft. wide.
77. $2986.122
78. Loss $6\frac{1}{4}$ per ct.
79. Gain $10.42
80. $23\frac{3}{4}$ per ct.
81. 150 seconds.
82. 306.3414 ft.
83. 289
84. 1331
85. $1200, A's share.
    $900, B's "
86. $.$06\frac{29}{36}$
87. $652.098
88. $14.613
89. 2650.725 lb.
90. 1651.301
91. 1 o'clock $5\frac{5}{11}$ m.
92. 3 o'clock $16\frac{4}{11}$ m.
93. 6 o'clock 27 minutes $41\frac{7}{13}$ seconds.
94. 12 o'clock 55 minutes $36\frac{12}{13}$ seconds.
95. Lost $163.69
96. $1818.649

Art. 151.—(p. 264.)

DAY-BOOK.

Inventory of the Assets and Liabilities of A. B., taken July 1, 1858.

ASSETS.

I own Cash	$200	00		
" Stock in trade	2000	00		
" 1 Horse	150	00		
" 1 Carriage	100	00		
Total Assets			2450	00

I owe nothing.

Providence, July 1, 1858.

Cash. *Dr.*					
To Cash in hand				$200	00
July 2.					
John Ellis. *Dr.*					
To 6 lb. B. H Sugar	@$ .08½		51		
" 1½ gal. Molasses	.48		72		
" 4 lb. Coffee	.12½		50		
				1	73
Mrs. Sarah Brown. *Dr.*					
To 9¾ yds. Lawn	@$ .31	3	02		
" 2½ yds. Cambric	.25		63		
" ¾ yd. Muslin	.42		31		
" 6 skeins Silk	.04		24		
				4	20
Cash. *Dr.*					
To 1 bbl. Flour		6	75		
" 3 bu. Meal	@$ .67	2	01		
" Sundries		8	27		
				17	03
Cash. *Cr.*					
By 123 lb. Butter	@$ .20			24	60
July 3.					
George Russell. *Cr.*					
By 17 bu. Corn	@$ .62	10	54		
" 20 bu. Oats	.37½	7	50		
				18	04
Arthur Stanhope. *Dr.*					
To 1 pr. Boots		2	67		
" 1 pr. Mittens			92		
" 2 Locks	@$ .46		92		
				4	51
Edward Jones. *Cr.*					
By 1½ days Labor	@$1.50			2	25
Edwin Smith. *Dr.*					
To Horse and Carriage, 9 miles	@$ .16⅔			1	50
Cash. *Dr.*					
To Sundries				18	21

Providence, July 6, 1858.

Cash.	*Cr.*				
By 20 bu. Potatoes	@$ .50	$10	00		
" 8½ doz. Eggs	.14	1	19		
				$11	19
Day & Austin.	*Cr.*				
By 1 cask Raisins, 98 lb.	@$ .08¼.........	8	08		
" 3 boxes Raisins, each 25 lb.	12½	9	38		
" 26 lb. Figs	09	2	34		
				19	80
John Ellis.	*Dr.*				
To 31¼ yds. Sheeting	@$ .11			3	44
Arthur Stanhope.	*Dr.*				
To ½ lb. Y. H. Tea	@$ .68				34
Wm. Jackson.	*Dr.*				
To 2 gal. Molasses	@$ .48				96
Cash.	*Dr.*				
To Sundries				11	35
July 7.					
Seth Turner.	*Dr.*				
To 3 doz. Eggs	@$ .16⅔.........		50		
" 2 bu. Potatoes	.55	1	10		
" 5 bu. Corn	.68	3	40		
				5	00
John Harris.	*Dr.*				
To 15½ lb. Cheese	@$ .09	1	40		
" 7½ lb. Butter	.25	1	87		
				3	27
Cash.	*Dr.*				
To 3 yd. Broadcloth	@$3.25	9	75		
" 1 bbl. Flour		6	75		
" Sundries		9	13		
				25	63
July 8.					
Mrs. Sarah Brown.	*Dr.*				
To 8 lb. B. H. Sugar	@$ .09		72		
" 2 lb. Cocoa	.18		36		
" 2 lb. White Sugar	.12		24	1	32

Providence, July 8, 1858.

Cash.	*Dr.*				
To Sundries				$ 15	00
July 9.					
Edward Jones.	*Dr.*				
To ¼ lb. Tea	@$ .56		14		
" 2 hands Tobacco	.05		10		
" 1 bunch Cigars			15		39
Alice Gray.	*Dr.*				
To 8 yds. Alpine	@$ .96	7	68		
" 4½ yds. Cambric	.14		63		
" 3 skeins Silk	.04		12		
1 yd. Drilling			11	8	54
Charles Hewins.	*Cr.*				
By 1 bbl. Crackers		3	75		
" 12 loaves Bread	@$ .4½		54		
" 5 doz. Cakes	.20	1	00	5	29
Seth Turner.	*Dr.*				
To 3 loaves Bread	@$ .05		15		
" 2 doz. Cakes	.25		50		65
Cash.	*Dr.*				
To Sundries				10	13
July 10.					
Edward Jones.	*Cr.*				
By Labor				1	12
Cash.	*Dr.*				
To Sundries				23	71
Cash.	*Cr.*				
By Sundries				1	37
July 12.					
Francis Soule.	*Cr.*				
By shoeing Horse				1	25
Edward Jones.	*Dr.*				
To 3 lb. Sugar	@$ .08		24		
" 1 lb. Coffee			13		37

Providence, July 12, 1858.

Edwin Smith.	*Dr.*				
To 2 yd. Broadcloth	@$3.50	7	00		
" 2¾ yd. Doeskin	1.50	4	13		
" ¾ yd. Satin Vesting	3.50	2	62		
" 1 doz. Buttons			42		
" Silk and Trimmings		1	13		
				15	30
Cash.	*Dr.*				
To Sundries				10	28
July 13.					
Charles Hewins.	*Cr.*				
By 12 loaves Bread	@$ .04½		54		
" 3 doz. Cakes	.20		60		
" 4 loaves Cake	.10		40		
				1	54
Freeman Hunt.	*Dr.*				
To 2 Scythes	@$1.00	2	00		
" 2 Rakes	.37		74		
" 1 Hay-fork			13		
				2	87
Francis Soule.	*Dr.*				
To 2½ gal. Molasses	@$ .42	1	05		
" 12 lb. B. H. Sugar	.09	1	08		
" 3 pk. Rye Meal	1.20 per bu.		90		
" 1 bu. Indian Meal			92		
" 1 lb. Tobacco			25		
				4	20
Mrs. Lucy Pond.	*Dr.*				
To 8 yds. Calico	@$ .12½	1	00		
" ½ lb. Tea	.50		25		
				1	25
Cash.	*Dr.*				
To Sundries				22	71
July 14.					
Cash.	*Cr.*				
By 12 bbl. Flour	@$6.25			75	00
Cash.	*Dr.*				
To 24 yd. Oil-cloth	@$ .58			13	92
John Ellis.	*Dr.*				
To 15 lb. Potash	@$ .10			1	50

Providence, July 14, 1858.

Seth Turner.	*Dr.*				
To 2 loaves Bread	@$ .05		10		
" 1 gal. Oil		1	17		
				1	27
Edward Jones.	*Cr.*				
By Labor					87
Day & Austin.	*Cr.*				
By 228 lb. Sugar	@$ .07	15	96		
" 319 lb. Sugar	.07½	23	92		
" 119 gal. Molasses	.33	39	27		
				79	15
Cash.	*Dr.*				
To Sundries				11	54
July 15.					
Cash.	*Dr.*				
To 15 bu. Corn	@$ .70	10	50		
" 15 bu. Oats	.41	5	33		
				15	83
George Russell.	*Dr.*				
To 1 pr. Calf Boots				8	75
Francis Soule.	*Cr.*				
By Reparing Carriage				1	86
Edwin Smith.	*Dr.*				
To Horse Hire				2	00
John Harris.	*Dr.*				
To 2¾ bu. Salt	@$ .63			1	73
Edward Jones.	*Cr.*				
By 12 qt. Berries	@$ .09			1	08
Mrs. Sarah Brown.	*Dr.*				
To 1 Mirror				1	25
Cash.	*Dr.*				
To Sundries				14	25
July 16.					
Alice Gray.	*Dr.*				
To 1 pr. Gaiter Boots		1	25		
" 2 yd. Ribbon	@$ .19		38	1	63

Providence, July 16, 1858.

Charles Hewins.	*Cr.*				
By 18 loaves Bread	@ $ .4½		81		
" 2 doz. Cakes	.20		40		
" 5 Cakes	.10		50		
				1	71
Cash.	*Cr.*				
By 1½ tons Hay	@$15.50			23	25
Edwin Smith.	*Dr.*				
To 1 box Cigars				5	75
Wm. Jackson.	*Dr.*				
To 1 piece Sheeting, 29 yd.	@$ .11½......	3	34		
" 1 " Shirting, 30½ yd.,	.13	3	96		
				7	30
John Ellis.	*Dr.*				
To 1 box Raisins, 25 lb.	@$ .15			3	75
George Russell.	*Cr.*				
By 1 pr. Calf Boots				3	75
George Russell.	*Dr.*				
To 1 pr. Patent Leather Boots				6	50
Cash.	*Dr.*				
To Sundries				19	86
July 17.					
Mrs. Lucy Pond.	*Dr.*				
To 3 lb. Soap	@$ .08				24
John Ellis.	*Dr.*				
To 8 lb. Salt Fish	@$ .05		40		
" 6 lb. Dried Beef	.11		66		
" 1 gal. Molasses			40		
				1	46
Alice Gray.	*Dr.*				
To 1½ doz. Cakes	@$ .25		38		
" 2¼ lb. Cheese	.10		22		
" 3 lb. Butter	.24		72		
				1	32
Seth Turner.	*Dr.*				
To 8 lb. Coffee	@$ .11		88		
" 2 lb. Tea	.46		92		
" 12 lb. Sugar	.09	1	08	2	88

Providence, July 17, 1858.

Mrs. Lucy Pond.	*Cr.*				
By 7 doz. Eggs	@$ .13		91		
23 qt. Berries	.07	1	61	2	52
Mrs. Lucy Pond.	*Dr.*				
To 1 oz. Nutmegs			10		
" ¼ lb. Cheese	@$ .20		05		15
John Harris.	*Dr.*				
To 9 qt. Berries	@$ .08				72
Arthur Stanhope.	*Dr.*				
To 2 qt. Oil	@$1.55 per gal.		78		
" 1 Lamp			25		
" 1 ball Wicking			06	1	09
Cash.	*Dr.*				
To Sundries				22	81
Cash.	*Cr.*				
By Family Expenses				13	58
July 19.					
Charles Hewins.	*Cr.*				
By 18 loaves Bread	@$ .04½		81		
" 2½ doz. Cakes	.20		50		
" 2 bbl. Crackers	3.50	7	00	8	31
Charles Hewin	*Dr.*				
To 5 bu. Potatoes	@$ .60			3	00
Francis Soule.	*Cr.*				
By Labor				2	75
John Ellis.	*Dr.*				
To 1 bbl. Flour			75		
" 1 Coat		8	37		
" 1 pr. Overalls			75		
" 1 Hat		2	31	18	18

Providence, July 19, 1858.

George Russell.	*Dr.*				
To 10 yd. Muslin	@$ .37	3	70		
" 4 yd. Edging	.20		80		
" 1 Silk Belt			33		
" 1¼ yd. Cotton	.10		13		
" 1½ doz. Buttons	.16		24		
" 1 card Hooks and Eyes			04	5	24
Cash.	*Dr.*				
To Sundries				13	31
July 20.					
John Ellis.	*Dr.*				
To 2 pr. Children's Shoes	@$ .83	1	66		
" 2 pr. Cotton Hose	.18		36		
" 3½ yd. Prints	.13		46	2	48
Edward Jones.	*Dr.*				
To 11 lb. Salt Fish	@$ .05		55		
" 6 lb. Rice	.05		30		
" 1 pk. Meal			20		
" ½ lb. Tea	.46		23	1	28
Cash.	*Cr.*				
By Groceries for Store				63	28
John Harris.	*Dr.*				
To 2 gal. Vinegar	@$ .20		40		
" 2 lb. Salæratus	.12		24		
" 1 doz. Cakes			25		
" 2 loaves Bread	.05		10		
" Crackers			25	1	24
Cash.	*Dr.*				
To Sundries				22	18
July 21.					
Day & Austin.	*Cr.*				
By 28 lb Y. H. Tea	@$ .50	14	00		
" 60 lb. Souchong Tea	.35	21	00		
" 98 lb. Coffee	.10	9	80	44	80

Providence, July 21, 1858.

Day & Austin.	*Dr.*				
To 1 ream Letter Paper		3	50		
" ½ ream Bill Paper	@$3.75	1	88		
" 4 packages Envelopes	.10		40		
" 1 bottle Ink			37		
" 1 box Pens		1	00		
				7	15
John Ellis.	*Dr.*				
To 1 Colburn's Common School Arithmetic					50
Edwin Smith.	*Dr.*				
To 22 yds. Carpeting	@$ .62	13	64		
" 1 paper Tacks			10		
" 1 small Hammer			18		
				13	92
Cash.	*Dr.*				
To Sundries				18	27
July 22.					
Mrs. Sarah Brown.	*Dr.*				
To 1 lb. Raisins			11		
" 2 lb. Sugar	@$ .10		20		
" 1 gal. Molasses			38		
					69
Edward Jones.	*Dr.*				
To 1 hand Tobacco					05
Wm. Jackson.	*Dr.*				
To ¼ lb. Pepper	@$ .20		05		
" 1 pk. Salt			24		
					29
Charles Hewins.	*Cr.*				
By 16 loaves Bread	@$ .04½		72		
" 8 Cakes	.10		80		
				1	
Edward Jones.	*Cr.*				
By 3 days' Labor	@$1.50			4	50
Edward Jones.	*Dr.*				
To Cash				1	00
Cash.	*Cr.*				
By Edward Jones				1	00
John Harris.	*Cr.*				
By Cash to balance Acc't				6	96

Providence, July 22, 1858.

Cash.	*Dr.*				
To John Harris		6	96		
" Sundries		16	25		
				23	21
July 23.					
Walter Gay.	*Dr.*				
To 1 bbl. Flour		6	75		
" 1 bu. Meal			84		
" 8 lb. Refined Sugar	@$ .12		96		
" 12 lb. B. H. Sugar	.09	1	08		
" 4 lb. Coffee	.13		52		
" ¾ lb. Tea	.56		42		
" 2 lb. Chocolate	.18		36		
				10	93
George Russell.	*Dr.*				
To 1 Axe		1	00		
" 1 Hoe			75		
				1	75
Cash.	*Cr.*				
By 6 bu. Beans	@$2.00			12	00
Cash.	*Dr.*				
To Sundries				10	75
July 24.					
Day & Austin.	*Dr.*				
To Goods delivered Willard Gay, per order				12	50
Sarah Brown.	*Cr.*				
By Cash on Acc't				5	00
Cash.	*Dr.*				
To Sarah Brown				5	00
Edwin Smith.	*Dr.*				
To 2 Brooms	@$ .25		50		
" 1 Brush			50		
" ½ doz. Knives and Forks	2.50	1	25		
				2	25
Edward Jones.	*Dr.*				
To 1½ lb. Cheese	@$ .10				15
Seth Turner.	*Dr.*				
To 1 pr. thick Boots				2	87
William Jackson.	*Dr.*				
To 1 Cap		1	25		
" 1 Vest		1	75	3	00

Providence, July 24, 1858.

Wm. Jackson.	*Cr.*				
By Labor				1	20
Arthur Stanhope.	*Dr.*				
To 1 pk. Beans	@$3.00 per bu.				75
Cash.	*Dr.*				
To Sundries				25	38
Cash.	*Cr.*				
By Family Expenses				5	28
July 26.					
Arthur Stanhope.	*Dr.*				
To 7 yd. Flannel	@$ .58			4	06
Walter Gay.	*Dr.*				
To 1 box Soap, 50 lb.	@$ .08	4	00		
" 1 Tub		1	23	5	28
Sarah Pond.	*Dr.*				
By 6 doz. Eggs	@$ .14		84		
" 13 qt. Berries	.06		78	1	62
Wm. Jackson.	*Dr.*				
To 1 bu. Indian Meal					70
George Russell.	*Dr.*				
To 1 lb. Salæratus					10
George Russell.	*Cr.*				
By 25 bu. Corn	@$ .65			16	25
Cash	*Dr.*				
To Sundries				9	88
July 27.					
Charles Hewins.	*Cr.*				
By 12 loaves Bread	@$ .04½		54		
" 7½ doz. Cakes	.20	1	50		
" 8 loaves Cake	.10		80	2	84

Providence, July 27, 1858.

Cash.	*Cr.*				
By 4 bu. Apples	@$ .87	3	48		
" 1 T. 3 cwt. Hay	13.50 per ton	15	52	19	00
Edwin Smith.	*Dr.*				
To 1 Shawl..		5	28		
" 1 set China		8	27	13	55
John Ellis.	*Dr.*				
To 9 lb. Sugar	@$ .08½		77		
" 3 lb. Crushed Sugar	.13		39		
" 1 gal. Molasses			38		
" 2 doz. Eggs	.16		32		
" ¼ lb. Cinnamon	.18		04		
" ¼ lb. Cloves	.16		04		
" 2 oz. Nutmegs	.12		24		
" ¼ lb. Ginger	.20		05		
" 1 lb. Saleratus			10	2	33
Cash.	*Dr.*				
To Sundries				17	28
July 28.					
Cash.	*Cr.*				
By Joseph Fisher, in trading Horses				50	00
Day & Austin.	*Cr.*				
By 1 hhd. Molasses, 137 gal.	@$ .29	39	73		
" 31 gal. Oil	.75	23	25		
" 33¾ gal. Oil	.92	31	05		
" 100 lb. Crushed Sugar	.10½	10	50	104	53
Charles Hewins.	*Dr.*				
To 1½ lb. Tea	@$ .48		72		
" 5 lb. Coffee	.14		70	1	42
Alice Gray.	*Dr.*				
To ¼ lb. Tea	@$ .48				12
Edward Jones.	*Dr.*				
To 3 lb. Salt Fish	@ $.05		15		
" 1 Salt Mackerel			10		25

Providence, July 28, 1858.

Cash.	*Dr.*				
To Sundries				11	36
July 29.					
Cash.	*Cr.*				
By 3 doz. Brooms	@$2.25 ...	6	75		
" 1 doz. Clothes Brooms		1	00		
" 6 Hair Brushes	.20 ...	1	20		
" 3 Hair Brushes	.33 ...		99		
" 1½ doz. Tooth Brushes	1.20 ...	1	80		
" 2 doz. " "	1.75 ...	3	50		
" ¾ doz. " "	3.00 ...	2	25	17	49
Walter Gay.	*Dr.*				
To 1 pr. Calf Boots		3	75		
" 1 pr. Slipper			75		
" 2 pr. Children's Shoes	@$1.12 ...	2	24	6	74
Sarah Pond.	*Dr.*				
To 1 piece Tape			06		
" 1 paper Pins			10		
" 2 skeins Silk	@$ .05 ...		10		26
Francis Soule.	*Dr.*				
To 1 bbl. Flour				6	62
Cash.	*Dr.*				
To Sundries				23	37
July 30.					
Cash.	*Dr.*				
To 1 Gold Piece found on way to Store				5	00
Sarah Brown	*Dr.*				
To 28 lb. Flour	@$ .04 ...			1	12
Charles Hewins.	*Dr.*				
To 2 yd. Superfine Broadcloth	@$3.75 ...	7	50		
" ¼ yd. Silk Velvet	4.25 ...	1	06		
" 1 Satin Vest Pattern		3	00		
" 3 yd. Doeskin	1.50 ...	4	50		
" 1 doz. Silk Buttons			50		
" Sewing Silk and Trimmings		1	00	17	56

Providence, July 30, 1858.

Freeman Hunt.	*Dr.*				
To 1 Razor			75		
" 1 Strop			37		
" 1 Lather Brush			25		
" 1 cake Soap			10	$1	47
John Ellis.	*Dr.*				
To 12 yd. Black Silk	@$1.05	12	60		
" 3 yd. Cambric	.20		60		
" Sewing Silk and Trimmings			37	13	57
Day & Austin.	*Dr.*				
To Cash on account				50	00
Cash.	*Cr.*				
By Day & Austin				50	00
Cash.	*Dr.*				
To Sundries				21	18
Edwin Smith.	*Dr.*				
To 1 Umbrella		1	75		
" 2 lb. Chocolate	@$ .20		40		
" 1 lb. Tea			56		
" 8 lb. Cheese	.09½		76	3	47
Arthur Stanhope.	*Dr.*				
To 1 bbl. Flour		6	62		
" 2 qt. Molasses	@$ .38 per gal.		19		
" 8 lb. Sugar	.09		72	7	53
Edward Jones.	*Cr.*				
By 2½ days Labor	@$1.50			3	75
Day & Austin.	*Dr.*				
To Goods delivered to S. Carey, per order				18	97
Seth Turner.	*Dr.*				
To 8 lb. Salt Fish	@$ .05		40		
" 2 qt. Oil	1.00 per gal.		50		
" 1 lb. Tobacco			25		
" 1 bunch Cigars			30	1	45

Providence, July 31, 1858.

Wm. Jackson.	*Dr.*				
To 1 Coat		7	50		
" 1 pr. Shoes		1	25	8	75
Cash.	*Cr.*				
By return of Gold Piece found yesterday		5	00		
" Family Expenses		17	31		
" 1 month's services of Clerk		33	33	55	64
Cash.	*Dr.*				
To Sundries				18	91
August 2.					
George Russell.	*Dr.*				
To Cash to balance account				20	70
Cash.	*Cr.*				
By George Russell				20	70
Arthur Stanhope.	*Cr.*				
By Cash to balance account				18	28
Cash.	*Dr.*				
To Arthur Stanhope				18	28
Edward Jones.	*Dr.*				
To Cash to balance account				10	08
Cash.	*Cr.*				
By Edward Jones				10	08
Seth Turner.	*Cr.*				
By Cash to balance account				14	12
Cash.	*Dr.*				
To Seth Turner				14	12
Alice Gray.	*Cr.*				
By my order on Day & Austin to balance acc't.				11	61
Day & Austin.	*Dr.*				
To my order in favor of Alice Gray		11	61		
" my note on 60 days to bal.		148	05	159	66

Providence, August 2, 1858.

Edwin Smith. *Cr.*				
By Cash	15	00		
" Due-bill to balance	42	74		
			57	74
Cash. *Dr.*				
To Edwin Smith			15	00
John Ellis. *Cr.*				
By Note on demand			48	94

Inventory of the Assets and Liabilities of A. B., taken August 2, 1858.

ASSETS.				
Stock in Trade	2025	00		
Cash on hand	265	18		
1 Horse	200	00		
1 Carriage	100	00		
1 Harness	25	00		
John Ellis owes me on Note	48	94		
Edwin Smith owes me on Due-bill	42	74		
Mrs. Sarah Brown owes me on Account	3	58		
Wm. Jackson owes me on Account	19	80		
Charles Hewins owes me on Account	1	27		
Francis Soule owes me on Account	5	46		
Freeman Hunt owes me on Account	4	34		
Walter Gay owes me on Account	22	90		
			2764	21
LIABILITIES.				
I owe Day & Austin on Note	148	05		
I owe Mrs. Lucy Pond on Account	2	24		
			150	29
Net Assets			2613	92
Assets by Inventory of July 1st			2450	00
Hence I have gained			163	92

Note.—The narrowness of the pages of this Key has rendered it necessary to omit the customary line and reference to the Leger at the left of the Day-Book pages.

LEGER 1.

Dr. *Cash.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 1	To Cash on hand	2	$200	00	July 2	By Butter	2	$24	60
“ 2	“ Sundries	2	17	03	“ 6	“ Sundries	3	11	19
“ 3	“ “	2	13	21	“ 10	“ “	4	1	37
“ 6	“ “	3	11	35	“ 10	“ Balance		278	90
“ 7	“ “	3	25	63					
“ 8	“ “	4	15	00					
“ 9	“ “	4	10	13					
“ 10	“ “	4	23	71					
			316	06				316	06
July 10	To balance		278	90	July 14	By Flour	5	75	00
“ 12	“ Sundries	5	10	28	“ 16	“ Hay	7	23	25
“ 13	“ “	5	22	71	“ 17	“ Family Exp. .	8	13	58
“ 14	“ Carpeting	5	13	92	“ “	“ Balance		297	27
“ “	“ Sundries	6	11	54					
“ 15	“ “	6	15	83					
“ “	“ “	6	14	25					
“ 16	“ “	7	19	36					
“ 17	“ “	8	22	31					
			409	10				409	10
July 17	To balance.........		297	27	July 20	By Groceries	9	63	28
“ 19	“ Sundries	9	13	31	“ 22	“ Edward Jones	10	1	00
“ 20	“ “	9	22	13	“ 23	“ Beans	11	12	00
“ 21	“ “	10	18	27	“ 24	“ Family Exp...	12	5	28
“ 22	“ Sundries	11	23	21	“ “	“ Balance		333	81
“ 23	“ “	11	10	75					
“ 24	“ Sarah Brown.	12	5	00					
“ “	“ Sundries	12	25	38					
			415	32				415	32
July 2	To balance.........		333	81	July 27	By Sundries	13	19	00
“ 26	“ Sundries	12	9	83	“ 28	“ Trad'g Horses	13	50	00
“ 27	“ “	13	17	28	“ 29	“ Sundries	14	17	49
“ 28	“ “	14	11	36	“ 30	“ Day & Austin	15	50	00
“ 29	“ “	14	23	37	“ 31	“ Sundries	16	55	64
“ 30	“ Gold-piece	14	5	00	“ “	“ Balance		248	56
“ “	“ Sundries	15	21	13					
“ 31	“	16	18	91					
			440	69				440	69
July 31	To balance.........		248	56	Aug. 2	By Geo. Russell..	16	20	70
Aug. 2	“ A. Stanhope ..	16	18	28	“ “	“ Edward Jones	16	10	08
“ “	“ Seth Turner ..	16	14	12	“ “	“ Balance		265	18
“ “	“ Edwin Smith	16	15	00					
			295	96				295	96
Aug. 2	To balance.........		265	18					

Dr. *John Ellis.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 2	To Sundries	2	1	73	Aug. 2	By Note to bal....	20	48	94
" 6	" Sheeting	3	3	44					
" 14	" Potash	6	1	50					
" 16	" Raisins	8	3	75					
" 17	" Sundries	9	1	46					
" 19	" "	10	18	18					
" 20	" "	11	2	48					
" 21	" Arithmetic ...	12		50					
" 27	" Sundries	16	2	33					
" 30	" "		13	57					
			48	94				48	94

Dr. *Mrs. Sarah Brown.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 2	To Sundries	2	4	20	July 24	By Cash on acc't.	14	5	00
" 8	" "	4	1	32	July 2	Bal'ce to new acc.		3	58
" 15	" Mirror	8	1	25					
" 22	" Sundries	12		69					
" 30	" Flour	18	1	12					
			8	58					
Aug. 2	To bal. f'm old ac.		3	58				8	58

Dr. *George Russell.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 15	To Boots...	2	3	75	July 3	By Sundries	1	18	04
" 16	" "	8	6	50	" 16	" Boots	8	3	75
" 19	" Sundries	10	5	24	" 26	" Corn	15	16	25
" 23	" "	13	1	75					
" 26	" Saleratus	15		10					
Aug. 2	" Cash to bal. ..	20	20	70					
			38	04				38	04

Dr. *Arthur Stanhope.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 3	To Sundries	2	4	51	Aug. 2	By Cash to bal. ...	20	18	28
" 6	" Tea	3		34					
" 17	" Sundries	10	1	09					
" 24	" Beans	14		75					
" 26	" Flannel	15	4	06					
" 31	" Sundries	19	7	53					
			18	28				18	28

Dr. *Edward Jones.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 9	To Sundries	4		39	July 3	By Labor	2	2	25
" 12	" "	5		37	" 10	" "	5	1	12
" 20	" "	11	1	28	" 14	" "	7		87
" 22	" Tobacco	12		05	" 15	" Berries	7	1	08
" "	" Cash	13	1	00	" 22	" Labor	13	4	50
" 24	" Cheese	14		15	" 31	" "	19	3	75
" 28	" Sundries	17		25					
Aug. 2	" Cash to bal. ...	20	10	08					
			13	57				13	57

Dr. *Edwin Smith.* *Cr.*

1858.		D. P.			1858.		D. P		
July 3	To Horse & Car'e.	3	1	50	Aug. 2	By Cash	20	15	00
" 12	" Sundries	5	15	30	" "	Due-bill for bal...	20	42	74
" 15	" Horse-hire	7	2	00					
" 16	" Cigars	8	5	75					
" 21	" Sundries	12	13	92					
" 24	" "	14	2	25					
" 27	" "	16	13	55					
" 31	" "	19	3	47					
			57	74				57	74

Dr. *Day & Austin.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 21	To Sundries	12	7	15	July 6	By Sundries	3	19	80
" 24	Md'se to W. Gay.	14	12	50	" 14	" "	7	79	15
" 30	To Cash	18	50	00	" 21	" "	12	44	80
" 31	Md'se to S. Carey	19	18	97	" 28	" "	16	104	53
Aug. 2	To my order	20	11	61					
" "	" Note	20	148	05					
			248	28				248	28

Dr. *John Harris.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 7	To Sundries	4	3	27	July 22	By Cash to bal ...	13	6	96
" 15	" Salt	7	1	73					
" 17	" Berries	9		72					
" 20	" Sundries	11	1	24					
			6	96				6	96

Dr. *William Jackson.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 6	To Molasses	3		96	July 14	By Labor	14	1	20
" 16	" Sundries	8	7	30	Aug. 2	Bal'ce to new ac't		19	80
" 22	" "	13		29					
" 24	" "	14	3	00					
" 26	" Meal	15		70					
" 31	" Sundries	19	8	75					
			21	00				21	00
Aug. 2	Bal. from old acc't		19	80					

Dr. *Seth Turner.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 7	To Sundries	3	5	00	Aug. 2	By Cash to bal. ..	20	14	12
" 9	" "	5		65					
" 14	" "	7	1	27					
" 17	" "	9	2	88					
" 24	" Boots	14	2	87					
" 31	" Sundries	19	1	45					
			14	12				14	12

Dr. *Alice Gray.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 9	To Sundries	4	8	54	Aug. 2	By order	20	11	61
" 16	" "	8	1	63					
" 17	" "	9	1	32					
" 28	" Tea..............	17		12					
			11	61				11	61

Dr. *Charles Hewins.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 19	To Potatoes	10	3	00	July 9	By Sundries	4	5	29
" 28	" Sundries	16	1	42	" 13	" "	6	1	54
" 30	" "	18	17	56	" 16	" "	8	1	71
					" 19	" "	10	8	31
					" 22	" "	13	1	52
					" 27	" "	15	2	34
					Aug. 2	Bal. to new acc't.		1	27
			21	98				21	98
Aug. 2	Bal. to old acc't...		1	27					

Dr. *Francis Soule.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 13	To Sundries	6	4	20	July 12	By shoeing Horse	5	1	25
" 29	" Flour	17	6	62	" 13	" Repair'g Car'e	7	1	36
					" 19	" Labor	10	2	75
					Aug. 2	Bal. to new acc't.		5	46
			10	82				10	82
Aug. 2	Bal. from old acc.		5	46					

Dr. *Freeman Hunt.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 13	To Sundries	6	2	87	Aug. 2	Bal. to new acc't.		4	34
" 30	" "	18	1	47					
			4	34				4	34
Aug. 2	Bal. from old acc.		4	34					

Dr *Mrs. Lucy Pond.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 13	To Sundries	6	1	25	July 17	By Sundries	9	2	52
" 17	" Soap	9		24	" 26	" "	15	1	62
" "	" Sundries	9		15					
" 29	" "	17		26					
Aug. 2	Bal to new acc't.		2	24					
			4	14				4	14
					Aug. 2	Bal. from old ac't		2	24

Dr. *Walter Gay.* *Cr.*

1858.		D. P.			1858.		D. P.		
July 23	To Sundries	13	10	93	Aug. 2	Bal. to new acc't.		22	90
" 26	" "	15	5	23					
" 29	" "	17	6	74					
			22	90				22	90
Aug. 2	Bal. to new acc't.		22	90					

NOTES, SUGGESTIONS, AND SOLUTIONS.

Note on Subtraction.—When several of the lower denominations of the subtrahend, taken together, fall but little short of a unit of some higher denomination, it will often be a saving of labor to subtract as though they equalled such a unit, and then add to the remainder enough to make up the deficiency, as illustrated in the following solutions:—

Art. 41. Ex. 1.—Since 2897 is 3 less than 2900, we may find the required remainder by subtracting 2900, and adding 3 to the remainder thus obtained.

Art. 41. Ex. 5.—Since 69699 is 301 less than 70000, we have only to subtract 70000 and add 301 to the remainder.

Art. 44. Ex. 11.—Since 27 ℔. 11 ℥. 7 ʒ. 2 ℈. 19 gr. lacks but 1 gr. of being 28 ℔., we have only to subtract 28 ℔. and add 1 gr. to the remainder.

Art. 45. Ex. 4.—Since 28 m. 7 fur. 39 rd. 5 yd. 1 ft. 3 in. lacks but 3 in. of being 29 m., we have only to subtract 29 m. and add 3 in. to the remainder.

In several of the other problems in these Articles, the same principle may be advantageously applied.

Note.—It will conduce to the formation of habits of carefulness and accuracy, to require the pupils to write out their work neatly, legibly, and with system, always avoiding unnecessary figures, lines, and flourishes. For illustration, Art. 46, Ex. 6, should be written—

Ex. 6, Page 53.

$327.13 = Cost of Sugar.
125.50 = " " Molasses.
520.62 = " " Flour.
132.28 = " " Butter.
86.72 = " " Cheese.

$1192.25 = Total Cost.
625.47 = Value of Cloth.

$566.78 = Sum paid in Cash.

Art. 59. Ex. 9.—Since 7 stacks contained 21 loads of hay, one stack must have contained $\frac{1}{7}$ of 21 loads, which is 3 loads. If one stack or 3 loads of hay weighed 5 T. 17 cwt. 3 qr. 19 lb., one load must have weighed $\frac{1}{3}$ of 5 T. 17 cwt. 3 qr. 19 ℔., which is 1 T. 19 cwt. 1 qr. 6 ℔. 5 oz. $5\frac{7}{21}$ dr.

Art. 59. Ex. 14.—

$$\begin{array}{r l}
\$42.35 & = \text{sum received per head.} \\
38.25 & = \text{cost per head.} \\
\cline{1-1}
\$4.10 & = \text{gain `` ``} \\
27 & \\
\cline{1-1}
\$110.70 & = \text{gain over first cost.} \\
25.38 & = \text{cost to market.} \\
\cline{1-1}
\$85.32 & = \text{net gain.}
\end{array}$$

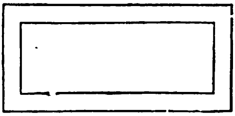
Art. 59. Ex. 15.—

$$\begin{array}{r l}
\$2.31 & = \text{sum received per pair.} \\
1.97 & = \text{cost per pair.} \\
\cline{1-1}
\$\ .34 & = \text{gain `` ``} \\
50 & \\
\cline{1-1}
\$17.00 & = \text{`` on 50 pairs or 1 case.} \\
75 & = \text{expense per case.} \\
\cline{1-1}
\$16.25 & = \text{net gain per case.} \\
17 & \\
\cline{1-1}
\$276.25 & = \text{gain on 17 cases.}
\end{array}$$

Art. 59. Ex. 23.—As the tea cost 2 s. 6 d. per ℔., and was sold for 3 s. per ℔., there was a gain of 6 d. on each pound of the tea, or on each 2 s. 6 d. of the investment. Now, as 2 s. 6 d. = 30 d., and 6 d. is $\frac{1}{5}$ of 30 d., it follows that the gain equalled $\frac{1}{5}$ of the cost, or $\frac{1}{5}$ of £148 17 s. 6 d., which is £29 15 s. 6d.

Art. 59. Ex. 25.—Since the pile is 8 ft. high and 4 ft. wide, there will be a cord for every 4 ft. in length. And as the pile is 84 ft. long, it will contain 21 cords.

Art. 59. Ex. 26.—Apply a similar principle to that illustrated in the last solution.



Art. 59. Ex. 27.—The walk along each side of the garden will be 229 ft. long and 3 ft. wide, equivalent to a walk twice 229, or 458 ft. long and 3 ft. wide. But as in building these walks on the two sides, we have shortened each of the end-walks by twice 3 ft., there remain to

be built two walks each 137 ft.,—6 ft., or 131 ft. long, equivalent to a single walk twice 131 ft., or 262 ft. long and 3 ft. wide. Hence, the whole walk to be built is equivalent to a single walk 458 ft. + 262 ft., or 720 ft. long and 3 ft. wide, and contains 3 times 720 sq. ft. = 2160 sq. ft.

Art. 59. Ex. 29.—The room being 16 ft. by 14 ft., the distance half around it, or from one corner to the opposite diagonal corner, is 16 ft. + 14 ft. = 30 ft., and the entire distance around it is twice 30 ft. = 60 ft. Hence, the four walls are together equivalent to a wall 60 ft. long and 9 ft. high, and therefore contain 9 times 60 sq. ft. = 540 sq. ft.

Art. 59. Ex. 31.—The orchard being 24 rd. long, must contain 24 sq. rd. for every rod in width, and hence to contain 3 acres or 480 sq. rd., must be as many rods in width as 24 is contained times in 480, which is 20 times. Hence the orchard is 20 rd. wide.

NOTE ON FACTORS.—Exercises in factoring numbers are among the most profitable a pupil can take. It is especially important that he become perfectly familiar with the factors of the first hundred numbers. We would also recommend to the teacher to give frequent oral exercises in finding the Least Common Multiple and the Greatest Common Divisor of small numbers.

NOTE ON CANCELLATION.—ART. 85. The pupil should be required in all the subsequent articles of the book, to apply the principles of this Article to all problems that admit of it.

Art. 93. Ex. 26.—A ton of hay costs \$19.37—\$8.69 = \$10.68 more than a cwt. of sugar. Hence, $8\frac{5}{9}$ tons of hay cost $8\frac{5}{9}$ times \$10.68 = \$91.873 more than $8\frac{5}{9}$ cwt. sugar, and I shall therefore receive \$91.873 in cash.

Art. 96. Ex. 26.—Write the work and cancel as below:—

$$\begin{array}{c} 8000 \\ \cancel{12}\qquad\cancel{16} \\ \dfrac{.\cancel{6}\times .\cancel{24}\times \cancel{4}.\cancel{8}}{.\cancel{012}\times \cancel{3}.\cancel{6}\times .\cancel{002}} = 8000 \\ .\cancel{02}\qquad .\cancel{3} \end{array}$$

We first cancelled .6 from .6 and from .012; then .02 from .02 and from .24; then 12 from 12 and from 3.6; then .3 from .3 and from 4.8, and lastly .002 from .002 and from 16.

NOTE.—The class should be encouraged to perform the cancellation in different ways. Such work furnishes a severe test of the pupil's thoroughness. He who can readily perform and explain it, has a good practical knowledge of the division of decimal fractions.

Art. 101. Ex. 21.—Since each son has twice as much as one daughter, he has as much as two daughters, and the 2 sons together have as much as four daughters. Hence, the 2 sons and 3 daughters have, together, as much as 7 daughters, or each daughter has $\frac{1}{7}$ of the estate, and each son has $\frac{2}{7}$ of it.

Art. 101. Ex. 24.—The silk and muslin together cost $1\frac{2}{7}$ times as much as the silk alone. Hence, $\$2\frac{1}{4} = 1\frac{2}{7}$ times the price of the silk.

Art. 101. Ex. 40.—

$$\begin{array}{rl} a = & \underline{\$2.16\tfrac{2}{3}} = \text{sum received per bbl.} \\ b = & \$1.62\tfrac{1}{2} = \text{cost per bbl.} \\ c = & \underline{\quad .18\tfrac{3}{4}} = \text{expense per bbl.} \\ a - (b + c) = & \$\quad .35\tfrac{5}{12} = \text{gain} \quad \text{“} \quad \text{“} \end{array}$$

$$\$.35\tfrac{5}{12} \times 27\tfrac{2}{3} = \frac{4.25 \times 83}{12 \times 3} = \frac{352.75}{36} = \$9.79\tfrac{31}{36}. \text{ Gain on whole.}$$

Art. 101. Ex. 42.—Mr. Stone can reap $\frac{1}{5}$ of the field, and Mr. Gray can reap $\frac{1}{6}$ of it in 1 day. Hence, both can reap $\frac{1}{5} + \frac{1}{6} = \frac{11}{30}$ of it in a day, and it will take them as many days to reap the whole of it as $\frac{11}{30}$ is contained times in 1, which is $\frac{30}{11} = 2\frac{8}{11}$ times. Hence, they can reap it in $2\frac{8}{11}$ days.

Art. 101. Ex. 69.—To do as much in 1 day as 50 men could do in 30 days, would require 30 times 50 men, and to do it in 10 days would require $\frac{1}{10}$ of the last result. If this number of men would be required to do $\frac{3}{5}$ of a certain piece of work, $\frac{1}{3}$ as many men would be required to do $\frac{1}{5}$ of it, and 2 times the last result to do $\frac{2}{5}$ of it. Hence—

$$\frac{50 \times 30 \times 2}{10 \times 3} = 100 = \text{Ans.}$$

Art. 102. Ex. 4.—6 ft. 3′ + 5 ft. 5′ = 11 ft. 8′ = half the distance around the box, and 2 times 11 ft. 8′ = 23 ft. 4′ = entire distance around it. As the box is 2 ft. 7′ high, its outer lateral surface $= 2\frac{7}{12} \times 23\frac{4}{12}$ sq. ft. = 60 sq. ft. 3′ 4″. But the top and the bottom together contain $2 \times 6\frac{3}{12} \times 5\frac{5}{12}$ sq. ft. = 67 sq. ft. 8′ 6″, which added to 60 sq. ft. 3′ 4″ = 127 sq. ft. 11′ 10″ = 127 sq. ft. 142 sq. in.

Art. 102. Ex. 5.—Each dimension will be 2 inches less than in the preceding problem.

Art. 102. Ex. 6.—To make the top and the bottom will require $2 \times 6\frac{3}{12} \times 5\frac{5}{12}$ sq. ft. = 67 sq. ft. 8′ 6″. The boards being 1 inch thick, the width of the boards required for the 2 sides will be 2 inches less than the height of the box. Hence, the sides will require $2 \times 6\frac{3}{12} \times 2\frac{5}{12}$ sq. ft. = 30 sq. ft. 2′ 6″ of boards. Now the boards required for the two ends will be 2 inches less in length than the width of the box, and 2 inches less in width than the height of the box. Hence, the two ends will require $2 \times 5\frac{3}{12} \times 2\frac{5}{12}$ sq. ft. = 25 sq. ft. 4′ 6″ of boards. Therefore the whole box will require 67 sq. ft. 8′ 6″ + 30 sq. ft. 2′ 0″ + 25 sq. ft. 4′ 6″ = 123 sq. ft. 3′ 6″ = 123 sq. ft. 42 sq. in. of boards.

Art. 102. Ex. 11. — The floor contains $16\frac{5}{12} \times 14\frac{9}{12}$ sq. ft. and $\frac{1}{9}$ as many square yards. As the carpeting is $\frac{3}{4}$ of a yard wide, a yard of it will cover only $\frac{3}{4}$ of a square yard of the floor, and as many yards will be required as $\frac{3}{4}$ is contained times in $\frac{1}{9}$ of $16\frac{5}{12} \times 14\frac{9}{12} = \frac{4}{3}$ of $\frac{1}{9}$ of $16\frac{5}{12} \times 14\frac{9}{12}$. Hence, $\dfrac{\overset{59}{\cancel{177}} \times 197 \times \cancel{4}}{12 \times \underset{4}{\cancel{12}} \times 9 \times 3} = \frac{11623}{324} = 35\frac{283}{324}$ yds. of carpeting are required.

Art. 102. Ex. 12. —15 ft. 6′ + 14 ft. 10′ = 30 ft. 4′ = half the length of the walls. Twice 30 ft. 4′ = 60 ft. 8′ = length of the wall, and $60\frac{8}{12} \times 9\frac{2}{12}$ = 556 sq. ft. 1′ 4″ = contents of the wall. $15\frac{6}{12} \times 14\frac{10}{12}$ = 229 sq. ft. 11′ 0″ = contents of the top. 556 sq. ft. 1′ 4″ + 229 sq. ft. 11′ 0″ = 786 sq. ft. 0′ 4″ = contents of the wall and the top.

3 windows, each 5 ft. 4′ high and 2 ft. 11″ wide = one window 3 times 5 ft. 4′ or 16 ft. high and 2 ft. 11′ wide, and contains $16 \times 2\frac{11}{12}$ sq. ft. = 46 sq. ft. 8′.

2 doors, each 6 ft. 11′ by 2 ft. 11′, and 1 door 6 ft. 11′ by 2 ft. 9′, contain as many sq. ft. as a surface 6 ft. 11′ long, and the sum of 2 ft. 11′ + 2 ft. 11′ + 2 ft. 9′ = 8 ft. 7′ wide, *i. e.*, they contain $6\frac{11}{12} \times 8\frac{7}{12}$ sq. ft. = 59 sq. ft. 4′ 5″.

The length of the mop-board equals the distance around the room minus the width of the doors = 60 ft. 8′ — 8 ft. 7′ = 52 ft. 1′. Hence the mop-board being 6′ wide, contains $\frac{6}{12}$ times $52\frac{1}{12}$ sq. ft. 26 sq. ft. 0′ 6″.

Deducting the contents of the doors, windows, and mop-board from the contents of the top and the walls, leave 65 sq. ft. 11′ 5″ = $72\frac{857}{1296}$ sq. yds. to be plastered.

Art. 102. Ex. 13. — The two side-walls are together equivalent to a wall twice 127 ft. 10′ long, or 255 ft. 8′ long; and being 2 ft. 4′ thick, they will cut off 2 ft. 4′ from each extremity of the end-walls. Hence, each end-wall to be built is 96 ft. 8′ — 9 ft. 8′ = 92 ft., and both are equivalent to a wall twice 92 ft. = 184 ft. long, and the entire wall is equivalent to a wall 255 ft. 8′ + 184 ft. = 439 ft. 8′ long. But from this is to be deducted 7 ft. 6′, the width of the large gate, leaving 432 ft. 2′. Now the surface of a wall 432 ft. 2′ long and 8 ft. 5′ high contains $8\frac{5}{12} \times 432\frac{2}{12}$ sq. ft. = 3637 sq. ft. 4′ 10″, from which, deducting 2 × $2\frac{7}{12}$ × $6\frac{8}{12}$ sq. ft., or 34 sq. ft. 5′ 4″ for the smaller gates, we have 3602 sq. ft. 11′ 6″ as the surface of one side of the solid wall to be built. As the wall is to be 2 ft. 4′ thick, it will contain $2\frac{4}{12}$ times 3602 cu. ft. 11′ 6″ = 8406 cu. ft. 10′ 10″ = 8406 cu. ft. 1560 cu. in.

Art. 102. Ex. 14. — Twice 23 ft. 2′ = 46 ft. 4′, length of the side-walls 18 ft. 7′ — 2 ft. = 16 ft. 7′ = remaining length of each end-wall. Twice 16 ft. 7′ = 33 ft. 2′ = length of the end-walls 46 ft. 4′ + 33 ft. 2′ = 79 ft. 6′, total length of the wall. $79\frac{6}{12} \times 21\frac{3}{12}$ = 1689 sq. ft. 4′ 6″ = surface of one side of the wall.

The two doors are together equal to a door 7 ft. 10′ high, and 3 ft. 8′ + 3 ft. 2′ = 6 ft. 10′ wide, and contain $6\frac{10}{12} \times 7\frac{10}{12}$ sq. ft. = 53 sq. ft. 6′ 4″.

The 18 windows are equivalent to a window 5 ft. 1′ high and 18 times 3 ft. 2′, or 57 ft. wide, and contains 37 × $5\frac{1}{12}$ sq. ft. = 289 sq. ft. 9′.

1689 sq. ft. 4′ 6″ — (53 sq. ft. 6′ 4″ + 289 sq. ft. 9′) = 1346 sq. ft. 1′ 2″, the surface of one side of the wall to be built. As the wall is 1 ft. thick, it contains 1346 cu. ft. 1′ 2″ = $1346\frac{168}{1728}$ cu. ft.

A brick 8′ long, 4′ wide, and 2′ thick, or $\frac{2}{3}$ ft. long, $\frac{1}{3}$ ft. wide, and $\frac{1}{6}$ ft. thick, contains $\frac{2}{3} \times \frac{1}{3} \times \frac{1}{6} = \frac{1}{27}$ cu. ft. Hence, 27 times $1346\frac{168}{1728}$ bricks = $36344\frac{5}{8}$ bricks will be required.

Art. 105. Ex. 22. — $1\frac{2}{3} : 1 :: 25\frac{1}{2} : 15\frac{3}{10}$.

Art. 105. Ex. 23. — $\frac{5}{7} : 1 :: 35\frac{1}{3} : 49\frac{7}{15}$.

Art. 106. Ex. 19.—

$$\left.\begin{array}{r@{\ :\ }l} 10 & 3 \\ 24 & 54 \\ 9\frac{3}{5} & 10\frac{2}{7} \\ 5 & 3 \\ 6 & 9 \\ \frac{9}{10} & 1 \end{array}\right\} :: 1\frac{7}{8} : 1\frac{319}{896}.$$

Art. 111. Ex. 28. —

$128.36 = cost per acre, Apr. 27
4.279 = int. for 6 mo. 20 da.
.043 = " " 2 da.

$132.682 = am't to Nov. 18 = total cost per acre.
150.73 = sum received per acre.

$ 18.048 = gain per acre.
7

$126.336 = total gain.

t. 111. Ex. 29. — Amount of $619.27 from Oct. 5 to Nov. 7 = .573, total cost. $250 plus the amount of $328.13 from Nov. 3 to 7 = $578.349, total sum received. Difference between the sum ived and the sum paid = $44.224, loss.

rt. 117. Ex. 14.—

$2000 = note.
41 = bank discount.

$1959.000 = sum received and put at interest.
120.478 = interest for 12 mo. 9 da.

$2079.478 = amount received for money lent.

$41.00 = sum paid at first renewal.
1.681 = interest for 8 mo. 6 da.
41.00 = sum paid at second renewal.
.84 = interest for 4 mo. 3 da.
000.00 = sum paid at bank.

$2084.521 = amount of payments.

$5.043 = difference between paym'ts and rec'ts = loss.

rt. 119. Ex. 9.—Since A pays ½ of the sum 3 months before it is he should keep the other half 3 months longer than he otherwise ld have done. Hence, he ought to pay it in 6 mo. + 3 mo., or in).

rt. 119. Ex. 10. — I am entitled to the

$$\left.\begin{array}{l}\text{Interest of \$500 for 8 mo.} = \$20\\ \text{" \quad 600 " \ 9 mo.} = \$27\\ \text{" \quad 900 " 10 mo.} = \$45\end{array}\right\} = \$92 \text{ interest.}$$

receive the

$$\left.\begin{array}{l}\text{Interest of \$500 for 1 mo.} = \$2.50\\ \text{" \quad 300 " \ 2 mo.} = \$3.00\\ \text{" \quad 200 " \ 3 mo.} = \$3.00\end{array}\right\} = \$8.50 \text{ interest.}$$

ence I am entitled to keep the remaining $1000 until its interest ls $92 — $8.50 = $83.50, which is found to be 16 mo. 21 da.

rt. 119. Ex. 11. —

A is entitled to the interest of $600 for 5 mo. = $15.
B " " " $900 for 8 mo. = $36.

ence, B is entitled to $21 more interest than A, and as his debt is more than A's, it can be kept as many months as it will take $300 in $21, which is 14 months.

t. 119. Ex. 12.— A gives up the use of $500 for 1 mo., and $400 mo., which is worth $8.50 interest. Hence, B should give up what is worth the same. But B is entitled to $18 interest, and $18 — 8.50 = $9.50. Hence, B should pay $800, the whole of his debt, in as many months as are required for it to gain $9.50, which are 2⅜ mo. = 2 mo. 11¼ da., or practically 2 mo. 11 da.

Art. 119. Ex. 13.—I ought to pay the sum of the debts, with 30 days' interest on $225, 15 days' interest on $325, and 10 days' interest on $130.

Art. 119. Ex. 14.—I must allow interest for 1 mo. 15 da. on $800, and for 20 days on $900, making $9.00 in all. Interest must be allowed me for 1 month on $800, and for 2 mo. 20 da. on $600, making $12 in all. Hence, $12 — $9 = $3, must be deducted from the sum of my debts.

Art. 119. Ex. 15.—I must allow interest on $450 from Sept. 3 to Oct. 20, 47 days; on $500 from Sept. 29 to Oct. 20, 21 days, and on $375 from Oct. 10 to Oct. 20, 10 days, making $5.90 in all. Interest must be allowed me on $750 from Oct. 20 to Nov. 1, 12 days = $1.50. Hence, I must pay the sum of the debts plus $4.40 int. = $2079.40.

Art. 123. Ex. 12.—Interest for 3 mo. 3 days at 2 per cent per month = .062 of the principal. Hence the $1200 received = face of the note minus .062 of it =.938 of face of the note. Therefore the note must be given for $\frac{1000}{938}$ of $1200 = $1276.596.

Art. 123. Ex. 16.—96 per cent of $728.96 = $699.802, cash paid = sum received on the note. Face of note due in 3 mo. = $\frac{2000}{1969}$ of $699.802 = $710.819. Hence, $728.96 — $710.819 = $18.141 gain by giving note.

Art. 126. Ex. 11.—15625 yd. at $12 = $1875. Deducting a commission of 4 per cent leaves $1800. Hence, the sum to be invested in cotton, after allowing a commission of 2 per cent on the purchase, is $\frac{100}{102}$ of $1800 = 1164.70\frac{10}{17}$, which at $.15 per bb. will pay for as many pounds of cotton as $.15 is contained times in 1764.70\frac{10}{17}$, which is 11764$\frac{12}{17}$ times. Hence 11764$\frac{12}{17}$ bb. can be purchased.

Art. 129. Ex. 11.—First cost of stock $2030. Amount from Mar. 1 to Sept'r. 1 at 7 per cent = $2101.05. Dividend July 1 = $110. Amount of $110 from July 1 to Sept. 1 at 7 per cent = $111.28⅓. Received for stock Sept. 1, $2240. Am't of receipts = $2240 + 111.28⅓ = $2351.28⅓. Gain = $2351.28⅓ — $2101.05 = $250.23⅓.

Art. 129. Ex. 12.—$1560 = first cost of stock. Amount for 14 mo. = $1669.20. First dividend = $48; amount for 8 mo. = $49.92. Second dividend = $64; amount for 2 mo. = 64.64. Received for stock, $1680. Am't of receipts, $1680 + $49.92 + $64.64 = $1794.56. Gain, $1794.56 — $1669.20 = $125.86.

Art. 129. Ex. 13. — Difference between 76 per cent and 100 per cent = 24 per cent. Hence, $144 = 24 per cent of par value, and the par value = $\frac{100}{24}$ of $144 = $600.

Art. 129. Ex. 14. — As I paid 80 per cent, and sold for 90 per cent of the par value, I gained 10 per cent or $\frac{1}{10}$ of the par value. Hence, 10 times $337.50 = $3375 = par value. Cost = 80 per cent of $3375 = $2700. selling price = 90 per cent of $3375 = $3037.50.

Art. 130. Ex. 18. — The importer sold the sugar for $\frac{4}{3}$ of what it cost him. The wholesale dealer sold it for $\frac{5}{4}$ of what it cost him, or for $\frac{5}{4}$ of $\frac{4}{3}$ of 5¼ cents. The retail dealer sold it for $\frac{6}{5}$ of what it cost him, or for $\frac{6}{5}$ of $\frac{5}{4}$ of $\frac{4}{3}$ of $.05¼ = 10½ cents.

Art. 130. Ex. 70. — Since $290 = $\frac{116}{100}$, or $\frac{29}{25}$ of the cost, the cost = $\frac{25}{29}$ of $290 = $250. Deducting $25 for expenses, gives $225 as first cost.

Art. 130. Ex. 72. — Since $125.32 = $\frac{7}{6}$ of the cost, $\frac{6}{7}$ of $125.32 must equal the cost, and the second lot being sold for $\frac{7}{8}$ of the cost, was sold for $\frac{7}{8}$ of $\frac{6}{7}$ of $125.32 = $93.99.

Art. 130. Ex. 73. — Ans. = $\frac{88}{100}$ of $\frac{100}{112}$ of $\frac{1}{123\frac{1}{2}}$ of $622.44 = $3.96.

Art. 130. Ex. 74. — $1001, the selling price = 91 per cent of cost. Hence, the proposed price, which is 103½ per cent of cost, must equal $\frac{103\frac{1}{2}}{91}$ of $1001 = $1138.50.

Art. 130. Ex. 76. — 6 per cent on ½ = 3 per cent on the whole, and 12 per cent on ½ = 6 per cent on the whole. Hence, the total gain = 6 per cent + 3 per cent or 9 per cent of cost. Therefore, the cost = $\frac{100}{9}$ of $47.25 = $525.

Art. 130. Ex. 77. — I sold $\frac{3}{4}$ of the whole for $\frac{5}{4}$ of its cost, *i. e.*, for $\frac{5}{4}$ of $\frac{3}{4}$, or $\frac{15}{16}$ of the cost of the whole. Hence, I lost $\frac{1}{16}$ of the cost = 6¼ per cent.

Art. 130. Ex. 78. — My sales = $\frac{4}{3}$ of the cost, but as I only collect $\frac{7}{8}$ of my sales, I collect $\frac{7}{8}$ of $\frac{4}{3}$ of cost = $\frac{7}{6}$ of cost. Hence, I gain $\frac{1}{6}$ of cost = 16⅔ per cent.

Art. 130. Ex. 79. — Selling price = $\frac{12}{10}$ of cost and also $\frac{9}{10}$ of asking price. Hence, asking price = $\frac{10}{9}$ of $\frac{12}{10}$ of $3.00 = $4.00.

Art. 130. Ex. 80. —

7 times $37.50 = $262.50 = first cost.
7 times 18 times $2.20 = 277.20 = cost of cutting and carting.
8.75 = other expenses.
$548.45 = total cost.

But I received $\frac{95}{100}$ of $\frac{175}{100}$ of \$548.45 for 7 × 18 cords, and hence for one cord I received $\frac{\$548.45 \times 175 \times 95}{100 \times 100 \times 7 \times 18} = \$7.237$.

Art. 131. Ex. 6. — Since A's stock = twice B's, the stock of both = 3 times that of B, and the entire gain = 3 times B's gain. Hence, B has $\frac{1}{3}$ of \$300 = \$100, and A has $\frac{2}{3}$ of \$300 = \$200.

Art. 131. Ex. 7. — Stock of both = $1\frac{2}{3}$ or $\frac{5}{3}$ times B's. Hence, the gain, \$750 = $\frac{5}{3}$ of B's gain, or B has $\frac{3}{5}$ of \$750 = \$450, and A has $\frac{2}{5}$ of \$750 = \$300.

Art. 131. Ex. 9. —

A's stock = 4 times B's stock.
B's " = 1 " " "
C's " = 2 " " "
D's " = 5 " " "

Hence the whole stock = 12 times B's stock, and A's share = $\frac{4}{12}$ of the whole, B's = $\frac{1}{12}$ of the whole, C's = $\frac{2}{12}$ of the whole, and D's = $\frac{5}{12}$ of the whole.

Art. 131. Ex. 10. — Deducting B's salary from the \$4000, leaves \$3000 as the gain to be divided in proportion to the stock. A then would receive \$8000 + $\frac{8}{15}$ of \$3000, and B would receive \$7000 + $\frac{7}{15}$ of \$3000 + \$1000.

Art. 131. Ex. 11. — \$15000 — \$4000 = \$11000, property at the end of the year. Deducting B's salary from this, leaves \$10000 to be divided in proportion to the stock. A then has $\frac{8}{15}$ of \$10000, and B has $\frac{7}{15}$ of \$10000 + \$1000.

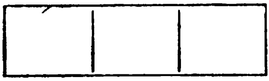
Art. 131. Ex. 12 and 13. — Allow for each man's salary, and then divide the remainder among the partners in proportion to their stocks. Each man's salary added to his share of the property gives the sum he would receive.

Art. 132. Ex. 4. — Jackson's salary = \$2000, which, taken from \$8000, the total gain, leaves \$6000 net gain to be divided. The use of White's \$6000 for 2 yrs. = the use of \$12000 for 1 year. The use of Jackson's \$5000 for $1\frac{1}{2}$ yrs. = the use of \$7500 for 1 yr. Hence, the use of the whole stock is worth the use of \$19500 for 1 yr. White would gain $\frac{120}{195}$ of \$6000, and Jackson would gain \$2000 + $\frac{75}{195}$ of \$6000.

Art. 132. Ex. 7. — Int. of \$1000 for 6 mo. + int. of \$2000 for 6 mo. = \$90 = int. of A's stock. Int. of \$800 for 6 mo. + int. of \$1500 for 6 mo. = \$65 = int. of B's stock. Int. of \$2000 for 4 mo. + int. of 1200 for 8 mo. = \$88 = int. of C's stock. \$90 + \$65 + \$88 = \$243 = int. of entire stock. Hence, A should lose $\frac{90}{243}$ of \$1600, B should lose $\frac{85}{243}$ of \$1600, and C should lose $\frac{88}{243}$ of \$1600. Deducting each man's loss from his stock in trade, shows how much he carries out of the firm.

Art. 132. Ex. 8. — Interest of Gould's stock = \$480. Interest of Austin's stock = \$660. Interest of entire stock, \$1140. Hence, after allowing for Gould's salary, Gould's share of the gain should be $\frac{48}{114}$ of \$3400 = \$1431.579, and Austin's should be $\frac{66}{114}$ of \$3400 = \$1968.421. Hence, Gould will have \$5000 + \$1431.579 + \$1600 = \$8031.579, and Austin will have \$6500 + \$1968.421 = \$8468.421.

Art. 132. Ex. 9. — The proportionate shares of the loss will be the same as in the last problem. But on the supposition that Gould's salary is unpaid, it must be added to the given loss as one of the debts of the firm, thus making a total loss of \$6600, of which Gould must share $\frac{48}{114}$, and Austin $\frac{66}{114}$. Hence, Gould will carry out of the firm \$5000 + \$1600 — \$2778.948 = \$3821.052, and Austin will carry out \$6500 — \$3821.052 = \$2678.948.



Art. 141. Ex. 21. — This rectangle may be divided into 3 equal squares, as illustrated by the figure in the margin, each of which will contain $\frac{1}{3}$ of its entire area. $\frac{1}{3}$ of 41067 = 13689 and $\sqrt{13689} = 117$. Hence the squares are 117 ft. on a side, or the rectangle is 117 ft. wide and 3 times 117 ft. = 351 ft. long. *Proof,* 117 × 351 = 41067.

Art. 141. Ex. 22. — This rectangle is $\frac{2}{3}$ of a square, having each side equal to the longer side of the rectangle. If $\frac{2}{3}$ of such a square contains 384 sq. ft., the whole of it will contain $\frac{3}{2}$ of 384 sq. ft. = 576 sq. ft. But $\sqrt{576} = 24$. Hence, the rectangle is 24 ft. long and $\frac{2}{3}$ of 24 ft. or 16 ft. wide.

Art. 141. Ex. 29. — By v the diameter $= 50 \div 3.1416 = \frac{50}{3.1416}$ ft., and by x the area $\frac{1}{4}$ of $\frac{50}{3.1416} \times 50$ sq. ft. = 198.9425 sq. ft.

Art. 141. Ex. 31. — By Y $78.54 \div 3.1416 = 25$ ft. = sq. of radius. Hence, radius $= \sqrt{25} = 5$ ft. and the diameter = twice 5 ft., or 10 ft.

Art. 141. Ex. 33. — By v and x area of circle $= 10^2 \times 3.1416$ sq. ft. Hence, by n the base of the rectangle $= \frac{314.16}{20}$ ft. = 15.708 ft

Art. 141. Ex. 34. — By v x and o, the altitude of the required triangle $= \frac{75 \times 75 \times 2}{3.1416 \times 4 \times 60}$ ft. = 14.92072 ft.

Art. 141. Ex. 35. — ½ of 36 ft. = 18 ft. = radius. By Y $18^2 \times 3.1416$ = area of circle. 4 times $18^2 \times 3.1416$ = area of square and $\sqrt{4 \times 18^2 \times 3.1416}$ = side of square = 63.8084 ft.

Art. 141. Ex. 36. — From z it follows that the diameters and the radii of circles are to each other as the square roots of their areas. As the area of the required circle = 9 times that of the given circle, its radius must be $\sqrt{9}$ or 3 times the radius of the given circle, *i. e.*, 3 times 5 ft. = 15 ft.

Art. 141. Ex. 38. — From z a rod 2 inches in diameter will weigh 4 times as much as a rod of the same length 1 inch in diameter. But if the first rod is ½ as long as the second, it will weigh ½ of 4 times = 2 times as much. 2 × 25.5664 lb. = 51.1328 lb.

Art. 141. Ex. 39. — Since the diameter of the second garden $\overset{\wedge}{=}$ 3 times that of the first, its area must be 9 times as great. Hence, it will cost 9 times as much = $900.

Art. 141. Ex. 41. — For 1st, see solution to 31st problem. For 2d, extract sq. root of area. For 3d, see solution to 21st problem. For 4th, extract sq. root of twice the area. For 5th, extract sq. root of area.

Art. 142. Ex. 13. — The given rectangle = ¾ of the square on its longest side. Hence, the sq. root of $\frac{4}{3}$ of 768 = $\sqrt{1024}$ = 32 ft. = longest side of rectangle. ¾ of 32 ft. = 24 ft. = shortest side. Hence, the diagonal = $\sqrt{32^2 + 24^2}$ = 40 ft.

Art. 142. Ex. 16. — $40^2 + 30^2$ = sq. of diagonal of floor = sq. of side of right-angled triangle, of which 18 ft., the height of the hall, is another side, and the required distance the hypothenuse. Hence, $\sqrt{40^2 + 30^2 + 18^2} = \sqrt{2824}$ = 53.1413 ft.

Art. 142. Ex. 17. — $300^2 - 180^2$ = square of distance from foot of spire to the stake. $\sqrt{300^2 - 180^2 + 400^2}$ ft. = 386.4761 ft. = distance from where I last stood to foot of spire. 466.4761 ft. — 80 ft. = 386.4761 ft. = distance from foot of the column to foot of the spire. 180 ft. — 15 ft. = 165 ft. = height of top of the spire above the column. $\sqrt{165^2 + 386.4761^2}$ = 420.2246 ft. = distance from top of spire to top of column.

Art. 143. Ex. 14. — By l, 6 times 100 ÷ 3.1416 = cube of diameter, and diameter = $\sqrt[3]{600 \div 3.1416} = \sqrt[3]{190.985485}$ = 5.7588 ft.

Art. 143. Ex. 15. — By l, $\sqrt[3]{300 \div 3.1416} = \sqrt[3]{95.49806}$ ft. = 4.5707 ft. = diameter. By j, $4.5707^2 \times 3.1416$ sq. ft. = 65.6318 sq. ft. = surface required.

Art. 143. Ex. 18. — The convex surface of a cone $= \frac{1}{2}$ the product of the circumference of its base, multiplied by its slant height. But the circumference of this base $= 4 \times 3.1416 = 12.5664$. But the radius of the base and the altitude form two sides of a right-angled triangle, of which the slant height is the hypothenuse. Hence, $\sqrt{2^2 + 7^2}$ $\sqrt{53} = 7.2801 =$ slant height, and the convex surface required $= \frac{1}{2}$ of $12.5664 \times 7.2801 = 45.7423$.

Art. 143. Ex. 20. — By m, since 9 is 3 times 3, a sphere 9 inches in diameter will weigh 3^3 or 27 times as much as a sphere 3 inches in diameter. Hence, 27×2 lb. or 54 lb. = Ans.

Art. 150. Ex. 2. — See solution to Ex. 6, Art. 102.

Art. 150. Ex. 4. — Since the minuend equals the sum of the subtrahend and the remainder, and the subtrahend equals twice the remainder, the minuend must equal 3 times the remainder, or the remainder must be $\frac{1}{3}$ of the minuend. Hence, $\frac{1}{3}$ of 4788 or 1596 = remainder.

Art. 150. Ex. 5.—The subtrahend + the remainder = the subtrahend + the subtrahend + 127 = twice the subtrahend + 127 = the minuend = 963. Hence, $\frac{963 - 127}{2} = 418 =$ the subtrahend, and $418 + 127 = 545 =$ remainder.

Art. 150. Ex. 6. — $1785 - 849 = 936 =$ the remainder. Since the minuend = the subtrahend + the remainder, 1785, the sum of the minuend and the subtrahend = twice the subtrahend + the remainder = twice the subtrahend + 936; and $1785 - 936 = 849 =$ twice the subtrahend, or the subtrahend $= \frac{1}{2}$ of $849 = 424\frac{1}{2}$.

Art. 150. Ex. 7. — Since the remainder + twice the remainder + $100 = 400$, $400 - 100$, or 300, must equal 3 times the remainder. Hence, the remainder = 100.

Art. 150. Ex. 8. — The remainder = subtrahend — $\frac{1}{3}$ of subtrahend $= \frac{2}{3}$ of subtrahend $= 96$. Hence, subtrahend $= \frac{3}{2}$ of 96, or 144, and the minuend $= 144 + 96 = 240$.

Art. 150. Ex. 9. — I pay $\frac{2}{3}$ of a cent each, and sell for $\frac{3}{2}$ of a cent each, and thus gain $\frac{3}{2} - \frac{2}{3} = \frac{5}{6}$ of a cent on each. Hence, I gain the same part of the cost that $\frac{5}{6}$ is of $\frac{2}{3}$ or of $\frac{4}{6}$, which, by Art. 90. Ex. 11, is $\frac{5}{4} = 125$ per cent.

Art. 150. Ex. 11.—The house-lot is $\frac{1}{15}$ of 1200 ft. wide and $\frac{1}{15}$ of 1275 ft. long.

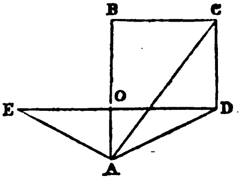
Art. 150. Ex. 12. — The gain was the interest of the note for 4 mo. 3 da. at 2 per cent per mo. = .082 of \$1000 = \$82.

Art. 150. Ex. 16. — Adding $\frac{1}{2}$ of any number to that number gives

1½ times that number. The difference between 1½ times a number and 3 times that number = 1½ times that number. Hence, 150 = 1½ times the required number, which is therefore 100.

Art. 150. Ex. 17. — $\sqrt{627264} = 792$ = product. But as the multiplier = $\frac{8}{11}$ of the multiplicand, the product = $\frac{8}{11}$ of the square of the multiplicand. Hence, the square of the multiplicand = $\frac{11}{8}$ of 792 = 1089, and the multiplicand = $\sqrt{1089} = 33$, and $\frac{8}{11}$ of 33 = 24 = multiplier.

Art. 150. Ex. 19. — Drawing a figure as in the margin, and calling the point where the line E D cuts the line A B, O, we have O D = B C = 27, O A = A B — O B = 16. We shall now have A C $= \sqrt{AB^2 + BC^2} = \sqrt{36^2 + 27^2} = 45$. A D $= \sqrt{OA^2 + CD^2} = \sqrt{27^2 + 16^2} = 31.38$. A E $= \sqrt{OE^2 + CA^2}$ = figure. $\sqrt{16^2 + 12^2} = 20$.



Art. 150. Ex. 22. — In 1 day A can do $\frac{1}{12}$ of the work, B can do $\frac{1}{15}$ of it. A and C together can do $\frac{1}{8}$ of it in 1 day, and B and D together can do $\frac{1}{9}$ of it in 1 day. Hence, in 1 day, C alone can do $\frac{1}{8} - \frac{1}{12} = \frac{1}{24}$, and D alone can do $\frac{1}{9} - \frac{1}{15} = \frac{2}{45}$ of the work, and C and D together can do $\frac{1}{24} + \frac{2}{45} = \frac{21}{360} = \frac{7}{120}$ of the work. Therefore, it will take them $\frac{120}{7} = 17\frac{1}{7}$ days to do the whole of the work.

Art. 150. Ex. 24. — The difference between ½ of any number and ⅓ of that number is always ½ — ⅓ or ⅙ of that number. By the conditions of the question, ⅙ of the required number is 4 more than $\frac{1}{10}$ of that number, *i. e.*, $\frac{1}{6} - \frac{1}{10}$ or $\frac{1}{15}$ of the number is 4. Hence, the number must be 15 times 4 = 60.

Art. 150. Ex. 25. — By the conditions of the question, 25 per cent of the first cost + 25 per cent of $1000 = 33⅓ per cent of the first cost. Hence, 33⅓ per cent — 25 per cent, or 8⅓ per cent of first cost = 25 per cent of $1000 = $250. Hence, first cost = $\frac{100}{8\frac{1}{3}}$ of $250 = 12 times $250 = $3000, and gain = ⅓ of $3000 = $1000.

Art. 150. Ex. 26. — I buy at 75 per cent of par value, and sell for 90 per cent of par value. Hence, I gain 15 per cent of par value = $\frac{15}{75}$ = 20 per cent of cost.

Art. 150. Ex. 29. — The services of all are worth $3.75 per day, and A earns $\frac{100}{375}$, B earns $\frac{125}{375}$, and C earns $\frac{150}{375}$ of what they all earn, or of $75.

Art. 150. Ex. 30. — Since Edward travels 4 miles each hour that he travels at all, he must be travelling 8 hours, and as he rests at the end of every two hours of actual travel, he will rest four times. The last hour of rest being at the end of the journey, he would have to be on the road 8 hours + 3 hours = 11 hours. In like manner, William must travel 10$\frac{2}{3}$ hours, and as he rests at the end of every third hour of actual travel, he would rest 3 times. Hence, he would reach his journey's end in 10$\frac{2}{3}$ hours + 3 hours = 13$\frac{2}{3}$ hours, or 2$\frac{2}{3}$ hours after Edward.

Art. 150. Ex. 31. — The shorter pole being $\frac{3}{4}$ of the longer, must be $\frac{3}{7}$ of their sum. Hence, the distance of the point on the ground from the foot of the longer pole = $\frac{3}{4}$ of the length of the longer pole, and we shall have a right-angled triangle, having a hypothenuse 30 ft. long, and one of its sides $\frac{3}{4}$ as long as the other. Hence, the square of its longer side plus the square of $\frac{3}{4}$ of that side (since the square of $\frac{3}{4} = \frac{9}{16}$) must equal the square of the longer side plus $\frac{9}{16}$ of that square = $1\frac{9}{16}$ or $\frac{25}{16}$ times that square. But this equals (Art. 142, a) 80^2 or 900. If $\frac{25}{16}$ of this square = 900, the square itself must equal $\frac{16}{25}$ of 900 = 576. Hence, the longer side, or the length of the longer pole = $\sqrt{576}$ = 24 ft. The shorter pole then = 18 ft. The distance between their ft. is 24 ft. + 18 ft. = 42 ft. The distance of their tops is the hypothenuse of a right-angled triangle, having 42 ft. for one side and 24 ft. — 18 ft. = 6 ft. for the other.

Art. 150. Ex. 32. — See Arith., Art. 143, Ex. 22, Note.

Art. 150. Ex. 33. — As many cubic inches of wood as there are in the difference between two cylinders of which the dimensions of one equal the outside dimensions of the pail, and those of the other equal the inside dimensions.

Art. 150. Ex. 34. — Divide the number of cubic inches in the smaller of the cylinders named in the last solution by 231. See Arith., Article 28, d.

Art. 150. Ex. 35. — The mixture sold equalled $\frac{11}{10}$ of $\frac{3}{4}$, or $\frac{33}{40}$ of the original contents of the cask. Hence, for every gallon there was at first, there will be only $\frac{33}{40}$ of a gallon to be sold, which at $2.25 per gallon, will bring $\frac{33}{40}$ of $\frac{225}{200} = \frac{297}{320}$ of the cost. Hence, I lost the difference between the cost and $\frac{297}{320}$ of the cost = $\frac{38}{320}$, or 4$\frac{3}{8}$ per cent of the cost.

Art. 150. Ex. 36. — As the water which was added cost nothing, and was sold for as much per gallon as was paid for the wine, the gain on the mixture sold must have equalled $\frac{2}{5}$ or 40 per cent of the cost of the wine which it contained. As there were only $\frac{7}{9}$ as many gallons of this mixture as there were of wine at first, it brought $\frac{7}{9}$ of the cost of the cask, thus showing a loss of $\frac{2}{9}$ or 22$\frac{2}{9}$ per cent of the cost of the cask.

Art. 150. Ex. 37. — A gain of 5 per cent of the cost of $\frac{1}{2}$ of the goods is equivalent to a gain of $\frac{1}{2}$ of 5 per cent or $2\frac{1}{2}$ per cent of the cost of the whole. Hence, \$100 = the difference between 10 per cent of the cost and $2\frac{1}{2}$ per cent of the cost = $7\frac{1}{2}$ per cent of the cost, and the cost = $\frac{100}{7\frac{1}{2}} = \frac{40}{3}$ of \$100 = \$$1333\frac{1}{3}$, and the loss = \$$133\frac{1}{3}$.

Art. 150. Ex. 43. — Charles's steps are $\frac{3}{2\frac{1}{2}} = \frac{6}{5}$ as long as Robert's, and he takes $\frac{3}{4}$ as many in any given time. Hence, he walks $\frac{3}{4}$ of $\frac{6}{5} = \frac{9}{10}$ as fast. Therefore, it will take him $\frac{10}{9}$ as long to walk any given distance as it takes Robert to walk the same distance; or to walk as far as Robert walks in 12 hours, will take Charles $\frac{10}{9}$ of 12 hours = $13\frac{1}{3}$ hours.

Art. 150. Ex. 44. — Since $\frac{1}{2}$ of Edward's share = $\frac{3}{4}$ of Arthur's, the whole of Edward's share must = $\frac{3}{2}$ of Arthur's share, and the sum of Edward's share and Arthur's share = $\frac{5}{2}$ of Arthur's share. $\frac{1}{4}$ of this = $\frac{5}{8}$ of Arthur's share, which, by the conditions of the question, is $\frac{1}{2}$ of Daniel's share. Hence, Daniel's share = 2 times $\frac{5}{8}$ or $\frac{5}{4}$ of Arthur's share, and once Arthur's share + $\frac{3}{2}$ of it + $\frac{5}{4}$ of it = $\frac{15}{4}$ of Arthur's share is equal to the whole sum divided. Hence, \$1000 = $\frac{15}{4}$ of Arthur's share, or Arthur's share = $\frac{4}{15}$ of \$1000 = \$$266\frac{2}{3}$; $\frac{3}{2}$ of \$$266\frac{2}{3}$ = = \$400 = Edward's share, and $\frac{5}{4}$ of \$$266\frac{2}{3}$ = \$$333\frac{1}{3}$ = Daniel's share.

Art. 150. Ex. 45. — Had all the heirs been living at the time of the man's death, the widow would have received $\frac{1}{3}$ of the estate, the son $\frac{4}{15}$ of it, and each daughter $\frac{2}{15}$ of it. Hence, the son would have twice as much as each daughter. Following this proportion, the son would have as much as the two surviving daughters, *i. e.*, would have $\frac{1}{2}$ of the estate = \$50000, while each daughter would have \$25000.

Art. 150. Ex. 46. — Each acre in the northern lot is worth $\frac{11}{10}$ of an acre in the middle lot, and $\frac{11}{10}$ of $\frac{9}{8}$, or $\frac{99}{80}$ of an acre in the southern lot. Hence, for each acre in the northern lot, there must be $\frac{11}{10}$ of an acre in the middle lot, and $\frac{99}{80}$ of an acre in the southern lot, or there will be 1 acre in the northern lot for every $1 + \frac{11}{10} + \frac{99}{80} = \frac{267}{80}$ acres in the entire lot. Hence, the northern lot contains $\frac{80}{267}$ of 100 acres = $29\frac{257}{267}$ acres, the middle lot contains $\frac{11}{10}$ of $29\frac{257}{267}$ acres = $32\frac{256}{267}$ acres, and the southern lot contains $\frac{99}{80}$ of $29\frac{257}{267}$ acres = $37\frac{21}{267}$ acres.

Art. 150. Ex. 47. — Provisions enough to last 700 men 16 mo., or 1 man 11200 mo. + enough to last 75 men 6 mo., or 1 man 450 mo. = enough to last 1 man 11200 mo. + 450 mo. = 11650 mo. = total quantity of provisions taken on board the vessel.

Previous to the last engagement, there were used provisions enough to last 700 men 2 mo., or 1 man 1400 mo. + enough to last 50 men $1\frac{1}{2}$ mo , or 1 man 75 mo. + enough to last 650 men 3 mo., or 1 man 1950 mo. + enough to last 750 men 4 mo., or 1 man 3000 mo. + enough to last 675 men 2 mo. or 1 man 1350 mo. = enough to last 1 man 1400 + 75 + 1950 + 3000 + 1350 mo. = 7775 mo. Hence, there were left enough to last 1 man 11650 mo. — 7775 mo. = 3875 mo. $\frac{1}{2}$ of this being destroyed, $\frac{1}{2}$ of it must remain = enough to last 1 man $\frac{1}{2}$ of 3875 mo. = $1937\frac{1}{2}$ mo. But by giving to each man $\frac{3}{4}$ of his usual allowance, this would last 1 man $\frac{4}{3}$ of $1937\frac{1}{2}$ mo. = $2583\frac{1}{3}$ mo., and would last 625 men $\frac{1}{625}$ of $2583\frac{1}{3}$ mo. = 4 mo. 4 da. Hence, the cruise lasted 2 mo. + 3 mo. + 4 mo. + 2 mo. + 4 mo. 4 da. = 15 mo. 4 days.

Art. 150. Ex. 48.—

1617 L. C. M. of 1st and 2d numbers = $3 \times 7^2 \times 11$.
2156 L. C. M. of 2d and 3d numbers = $2^2 \times 7^2 \times 11$.
132 L. C. M. of 1st and 3d numbers = $2^2 \times 3 \times 11$.

2^2 not being a factor of 1617, cannot be a factor of either the first or the second number, and hence must be a factor of the third number. 3 not being a factor of 2156, cannot be a factor of either the second or the third number, and hence must be a factor of the first. 7^2 not being a factor of 132, cannot be a factor of either the first or the third number, and hence must be a factor of the second. 11 being a factor of 1617, 2156, and 132, must be a factor of at least two of the required numbers. But it cannot be a factor of both the first and the second numbers, for they are prime to each other, and for a similar reason, it cannot be a factor of both the second and the third. Hence, the two numbers of which it is a factor, must be the first and the third.

Having thus accounted for all the factors, we know that the first number = 11 × 3 or 33, the second = 7^2 or 49, and the third $2^2 \times 11$ or 44.

Art. 150. Ex. 49.—A can do the first piece of work in $\frac{3}{2}$ of 9 days = $\frac{27}{2}$ days, and hence can do $\frac{2}{27}$ of it in a day. B can do it in $\frac{4}{3}$ of 10 days = $\frac{40}{3}$ days, and hence can do $\frac{3}{40}$ of it in a day. Hence, both can do $\frac{2}{27} + \frac{3}{40} = \frac{161}{1080}$ of it in one day, and it will take them $\frac{1080}{161}$ days to do the whole of it, and 3.22 times $\frac{1080}{161}$ days = 21.6 days to do a piece 3.22 times as large.

Art. 150. Ex. 50.—At the end of 1 hour, the cistern will be $\frac{1}{2} - \frac{1}{3}$ = $\frac{1}{6}$ full. Hence, it will be filled in 6 hours.

Art. 150. Ex. 51.—27 being 9 times 3, a ball 27 inches in diameter will weigh as much as 9^3 or 729 balls 3 inches in diameter. See Arith., Art. 143, m.

Art. 150. Ex. 52.—A travels $\frac{4}{5}$ as far in any given time as B. Hence 108 miles, the distance travelled by both = $1\frac{4}{5}$ or $\frac{9}{5}$ times the distance travelled by A. Hence, A travelled $\frac{5}{9}$ of 108 miles = 60 miles in 14 hours, and $\frac{1}{14}$ of 60 miles = $4\frac{2}{7}$ miles in 1 hour, and B travelled $\frac{4}{5}$ of $4\frac{2}{7}$ miles = $3\frac{3}{7}$ miles in 1 hour.

Art 150. Ex. 53. — A is entitled to the use of \$450 for 8 mo., worth at 6 per cent interest, \$18. But instead of this, he receives the use of $\frac{2}{3}$ of \$450 = \$300 for 15 mo., worth \$22.50. Hence, by the proposed arrangement he gains \$4.50 on the money owed to B, and B ought to keep the amount he owes A enough longer to gain \$4.50.

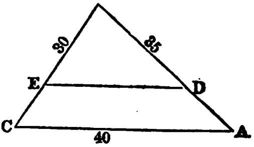
B was originally entitled to the use of \$600 for 10 mo., worth, at 6 per ct., \$30, but to counterbalance A's gain and his own loss on A's debt, he should keep it enough longer to gain \$4.50, thus making \$34.50 his due. After having had the use of \$600 for 3 mo., worth \$9, he would be entitled to the use of $\frac{4}{5}$ of \$600 = \$480 enough longer to have its interest equal \$34.50 — \$9 = \$25.50, which will be 10 mo. 19 days. Hence, he should pay it in 8 mo. + 10 mo. 19 days = 18 mo. 19 days.

Art. 150. Ex. 54. — In order that the apples in the second lot may bring the same price as if sold at the rate of 5 for 2 cents, it is necessary that 3 should be sold for a cent as many times as 2 are sold for a cent. But when 10 threes and 10 twos have thus been sold, 30 apples will have been sold at the rate of 3 for a cent, and only 20 will have been sold at the rate of 2 for a cent. Thus there will have been sold 50 apples at the rate of 5 for 2 cents, and there will remain 10 to be sold at the rate of 2 for a cent, which will bring 5 cents, or 1 cent more than if they were sold at the rate of 5 for 2 cents.

Art. 150. Ex. 55. — Since the current increases the speed of the boat in descending, and decreases it just as much in ascending the river, 15 miles — 4 miles or 11 miles = twice the velocity of the current per hour. Hence, the current moves $\frac{1}{2}$ of 11 miles = $5\frac{1}{2}$ miles per hour, and the boat would move in still water 4 + $5\frac{1}{2}$ miles, or 15 — $5\frac{1}{2}$ miles = $9\frac{1}{2}$ miles per hour.

Art. 150. Ex. 56. — $\frac{60 \times 30 \times 7 \times 7 \times 4 \times 4 \times 3}{21 \times 5 \times 6 \times 5 \times 3 \times 2}$ men = 224 men.

Art. 150. Ex. 57. — The part left after cutting off the trapezoid will be a triangle similar to the original, and will contain $\frac{1}{2}$ as many square rods. Hence by Art. 141, *u*, 2 : 1 : : AB^2 or $30^2 : BD^2$; and $BD^2 = \frac{900}{2} = 450$. Hence, $BD = \sqrt{450} = 21.213$ ft. Again, 2 : 1 : : BC^2 or $35^2 : BE^2$; and $BE^2 = \frac{1225}{2} = 612.5$. Hence $BE = \sqrt{612.5} = 24.749$ ft. Again, 2 : 1 : : AC^2 or $40^2 = DE^2$, and $DE^2 = \frac{1600}{2} = 800$. Hence, $DE = \sqrt{800} = 28.284$ ft. Hence, AB — BD = AD = 30 ft. — 21.213 ft. = 8.787 ft., BC — BE = EC = 35 ft. — 27.749 ft. = 10.251 ft.



Art. 150. Ex. 58. — Since the boat sails only $\frac{3}{7}$ as fast against the

current as with it, it must take $\frac{7}{3}$ or $2\frac{1}{3}$ times as long to sail from A to B, as to sail from B to A. Hence, to sail from B to A and back would require $3\frac{1}{3}$ or $\frac{10}{3}$ times as long as to sail from B to A. Hence, 12 hours $= \frac{10}{3}$ of the time occupied in sailing from B to A, or it takes $\frac{3}{10}$ of 12 hours = 3.6 hours to sail from B to A, and $\frac{7}{3}$ of 3.6 hours = 8.4 hours to sail from A to B. Therefore, A is 3.6 times 7 miles, or 8.4 times 3 miles = 25.2 miles from B.

Art. 150. Ex. 59. — Had the laborer worked all the time, I should have owed him \$90. But as I only owed him \$74, he must have lost \$16 by his idleness. His loss for each idle day will be his wages plus his forfeit = \$1.50 + \$.50 = \$2. Hence, to lose \$16, he must have been idle 8 days, and he worked 60 — 8 days = 52 days.

Art. 150. Ex. 60. — Lewis earns in 8 weeks 8 times $\$1\frac{1}{4}$ = \$10 more than Herbert. Hence, \$94 = \$10 more than twice what Herbert earns, or Herbert earns $\frac{1}{2}$ of (94 — 10) = $\frac{1}{2}$ of \$84 = \$42, and Lewis earns \$42 + \$10 = \$52.

Art. 150. Ex. 61.—$\frac{1}{15}$ of a gallon flows through the first pipe, and $\frac{1}{20}$ of a gallon through the second each minute it is open, so that at the end of each 2 minutes till the cistern is full, there will be a net gain of $\frac{1}{15} - \frac{1}{20} = \frac{1}{60}$ of a gallon, equivalent to $\frac{1}{120}$ of a gallon per minute. But as the pipes are open alternately for a minute at a time, the cistern will be first filled at the end of one of the minutes during which the first pipe is open. But at the beginning of that minute, the cistern contained $100 - \frac{1}{15} = 99\frac{14}{15}$ gallons, which must have been gained at the average rate of $\frac{1}{120}$ of a gallon per minute, and hence would require 120 times $99\frac{14}{15}$ minutes = 11992 minutes. Adding to this 1 minute, gives 11993 minutes, the time required to fill the cistern.

Art. 150. Ex. 62. — Once the first number $= \frac{1}{2}$ of 3 times the second $= \frac{3}{2}$ of the second. Hence, 1000 = the sum of the two numbers $= \frac{5}{2}$ of the second, and the second number $= \frac{2}{5}$ of 1000 = 400, and the first $= \frac{3}{5}$ of 1000 = 600.

Art. 150. Ex. 63. — $\frac{1}{7}$ of $\dfrac{2\frac{3}{7}}{5\frac{1}{6}} \div \dfrac{8\frac{1}{2}}{1\frac{3}{4}}$ of $\dfrac{4\frac{1}{5}}{4\frac{3}{7}} = \frac{5}{343}$.

Art. 150. Ex. 65. — Amount of \$1000 for 6 mo. = \$1030 = amount of first cost of cloth at the end of 6 mo. \$1250 = sum for which the cloth was sold. Only $\frac{9}{10}$ of this was collected, and only 96 per cent or $\frac{24}{25}$ of the sum collected would be paid to me. Hence, I receive only $\frac{24}{25}$ of $\frac{9}{10}$ of \$1250 = \$1080, and therefore gain = \$1080 — \$1030 = \$50.

Art. 150. Ex. 68. — Each pound of coffee being worth $\frac{2}{5}$ of a pound of tea, 48 pounds of coffee will be worth 48 times $\frac{2}{5}$ of a pound of tea

= $19\frac{1}{5}$ lb. tea. Hence, 48 lb. of coffee + 36 lb. of tea = $55\frac{1}{5}$ or $\frac{276}{5}$ lb. of tea, and a pound of tea is worth $\frac{5}{276}$ of \$17.25 = \$.$31\frac{1}{4}$.

Art. 150. Ex. 69. — Since B put in 3 times as much capital as A, his share of the profits would equal 3 times A's. But by the conditions of the problem, B's share of the profits = $1\frac{1}{5}$ times A's share of the profits + $1\frac{1}{5}$ times \$800 = $1\frac{1}{5}$ times A's share of the profits + \$960. Hence, 3 times — $1\frac{1}{5}$ times = $1\frac{4}{5}$ times A's share of the profits must also equal \$960. A's share of the profits = $\frac{5}{9}$ of \$960 = \$$533\frac{1}{3}$, and he receives his salary of \$800 + \$$533\frac{1}{3}$ = \$$1333\frac{1}{3}$. B's share of the profits = 3 times \$$533\frac{1}{3}$ = \$1600 = $1\frac{1}{5}$ times \$$1333\frac{1}{3}$. A's share of the stock = twice \$$1333\frac{1}{3}$ = \$$2666\frac{2}{3}$, and B's share = 3 times \$$2666\frac{2}{3}$ = \$8000.

Art. 150. Ex. 70. — Beginning with his last investment, we find that the \$1000 invested in insurance stock must be \$1000 less than half the money he had before buying the railroad stock. Hence before purchasing the railroad stock, he had twice the sum of \$1000 + \$1000 or twice \$2000 = \$4000. This \$4000 must be \$1000 less than half the money which he had before buying the bank stock. Hence, before buying the bank stock, he had twice the sum of \$4000 + \$1000, or twice \$5000 = \$10000. Following this process gives the required answer.

Art. 150. Ex. 71. — The molasses cost .01 of \$36.10 = \$.361 per gallon. If I am to gain 10 per cent of the original investment, I must receive 110 per cent, or $\frac{11}{10}$ of the cost of each gallon which there was in the lot at first. But the sum received is only 95 per cent, or $\frac{19}{20}$ of the sum collected. Hence, the sum collected is $\frac{20}{19}$ of $\frac{11}{10}$ of \$.361. But the sum collected was only 88 per cent, or $\frac{22}{25}$ of the selling price. Hence, this selling price = $\frac{25}{22}$ the sum collected = $\frac{25}{22}$ of $\frac{20}{19}$ of $\frac{11}{10}$ of \$.361. As 5 per cent or $\frac{1}{20}$ of the molasses wastes, only $\frac{19}{20}$ of it are sold, and the same is to be received on this that would have been received by selling the whole at the rate above determined. Hence, every gallon must bring $\frac{20}{19}$ that sum, *i. e.*, $\frac{20}{19}$ of $\frac{25}{22}$ of $\frac{20}{19}$ of $\frac{11}{20}$ of \$.361 = \$.50.

Art. 150. Ex. 72. — In 4 years A will save $\frac{4}{3}$ of his income, and B will save $\frac{4}{5}$ of it. Hence, by the conditions of the problem, $\frac{4}{3}$ of the income = \$1000 more than $\frac{1}{2}$ of $\frac{4}{5}$, or $\frac{2}{5}$ of it. Hence, $\frac{4}{3}$ of the income — $\frac{2}{5}$ of it = $\frac{14}{15}$ of it = \$1000, and the income = $\frac{14}{15}$ of \$1000 = \$$1071\frac{3}{7}$.

Art. 150. Ex. 73. — The pasturage of A's 3 horses for 5 weeks is worth as much as the pasturage of 1 horse 15 weeks, or of 1 cow $1\frac{2}{3}$ times 15 weeks, or 25 weeks. The pasturage of A's 7 cows 14 weeks is worth as the pasturage of one cow 98 weeks. Hence, A has what is equivalent to the pasturage of 1 cow 25 wk. + 98 wk. = 123 wk.

The pasturage of B's 2 horses 6 weeks is worth as much as the pasturage of 1 horse 12 weeks, or of 1 cow $1\frac{2}{3}$ times 12 weeks or 20 weeks.

The pasturage of 1 cow 7 wk. + the pasturage of 5 cows 12 wk. = the pasturage of 1 cow 7 wk. + 60 wk. = 67 wk. Hence, B has what is equivalent to the pasturage of one cow 20 wk. + 67 wk. or 87 wk.

Hence, both have what is equivalent to the pasturage of 1 cow 123 wk. + 87 wk. = 210 wk., and A should pay $\frac{123}{210}$ of \$64 = \$37.48$\frac{4}{7}$, and B should pay $\frac{87}{210}$ of \$64 = \$26.51$\frac{3}{7}$.

Art. 150. Ex. 74. — The square root of 4 times any number equals twice the square root of the number. Hence, by the conditions of the problem, twice the square root of the required number is 36 more than once the square root of that number, which shows that 36 is the square root of the number and $36^2 = 1296$ = the number.

Art. 150. Ex. 75. — The difference between a gain of 25 per cent of the cost and a loss of 25 per cent of the cost = 50 per cent or $\frac{1}{2}$ of the cost. Hence, the lot cost twice \$2250 = \$4500, and was sold for $\frac{5}{4}$ of \$4500 = \$5625. Being sold for as many dollars per acre as there were acres in the field, 5625 must be the square of the number of acres, or of the selling price per acre. Hence, the selling price per acre = $\sqrt{5625}$ = 75 = number of acres. Since the selling price = $\frac{5}{4}$ of the cost, the cost = $\frac{4}{5}$ of \$75 = \$60 per acre.

Art. 150. Ex. 76. — The square within the walk will contain just $\frac{9}{10}$ of the area of the garden, or $\frac{9}{10}$ of 250000 sq. ft. = 225000 sq. ft., and $\sqrt{225000}$ = 474.3416 ft. = length of each side of the square. Hence, 500 ft. = 474.3416 ft. = 25.6584 ft. = twice the width of the walk, and the walk must be $\frac{1}{2}$ of 25.6584 ft. = 12.8292 ft.

Art. 150. Ex. 77.—The difference between the amount of all the sums I pay out from the time they are paid to Sept. 1, when the transactions are supposed to be closed, and the amount of all I receive from the day they are received until Sept. 1, will be my gain.

My expenses are —

\$5101.00, cost of goods and insurance, Jan. 1.
204.04, interest for 8 mo. to Sept. 1.
1000.00, expenses May 1.
20.00, interest for 4 mo. to Sept. 1.

\$6325.04, amount of money paid out by me.

My agent sells for $\frac{3}{2}$ of \$5000 = \$7500, from which, deducting \$225 commission and \$100 for freight and other expenses, leaves \$7175 due me = sum invested in cotton plus his commission = 101$\frac{1}{2}$ per cent or $\frac{203}{200}$ of the sum invested in cotton. Hence, he invested $\frac{200}{203}$ of \$7175 = \$7068.965. I sold the cotton May 1, for $\frac{5}{4}$ of \$7068.965 = \$8836.206, receiving in payment a note on 3 months. This note discounted May 3, would net me \$8702.19. But $\frac{1}{2}$ of \$8702.19 = \$4351.095, was invested in railroad stock at 85 per cent, or $\frac{17}{20}$ of its par value. Hence, its par value $\frac{20}{17}$ of $4351.095 = $5118.935. 4 per ct. of $5118.935 = $204.757 = dividend July 1. Am't of this dividend from July 3 to Sept. 1 = $20677.

105 per cent of $5118.935 = $5374.882, sum received for the first lot of stock, Sept. 1.

$\frac{1}{2}$ of $8702.19 = $4351.095 = sum invested in railroad stock at 70 per cent, or $\frac{7}{10}$ of the par value. Since 60 per cent is $\frac{6}{7}$ of 70 per cent, $\frac{6}{7}$ of $4351.095 = $3729.51 = sum received for the second lot of stock, Sept. 1. Hence, $3729.51 + $5374.882 + $206.77 = $9311.162 = amount of receipts, and $9311.162 — $6325.04 = $2986.122 = gain.

NOTE. — The $8701.585 received May 1 on the note, was not added to the other receipts, because it was immediately expended again, and therefore if added to the receipts, would also have been added to the expenses.

Art. 150. Ex. 78.—My sales = $\frac{5}{4}$ of the cost, but I collect only $\frac{3}{4}$ of my sales = $\frac{3}{4}$ of $\frac{5}{4}$, or $\frac{15}{16}$ of the cost. Hence, I lose $\frac{1}{16}$ or 6¼ per ct. of the cost.

Art. 150. Ex. 79.—$556.10 = $\frac{11}{10}$ of the cost. Hence, the cost = $\frac{10}{11}$ of $556.10 = $505.545, and I shall receive for the second lot of goods $\frac{5}{4}$ of $\frac{1}{2}$ of $505.545 — $315.965, which, added to the $200 received for the first lot = $515.965 = amount received for both lots. Hence, I shall gain $10.42.

Art. 150. Ex. 80.—Amount of expenses, $2750 + $2000 the net gain = $4750, which he must receive over the first-cost of his goods. But $20000 = cost of goods and his profits. Hence the cost of the goods equals $20000 — $4750 = $15250, and he must sell at an advance of $\frac{4750}{15250}$ = 31$\frac{9}{61}$ per cent of the first cost.

Art. 150. Ex. 82.—By Art. 141, o, 18769 = $\frac{1}{2}$ of the product of the base of the triangle by the altitude, and as $\frac{1}{2}$ of the base equals the altitude, 18769 must equal the square of the altitude, and $\sqrt{18769}$ = 137 ft., must be the altitude. The base then = 2 × 137 ft. = 274 ft., and the hypothenuse = $\sqrt{137^2 + 274^2}$ = 306.341.

NOTE. — It would have been shorter, after having found that 18769 = the square of the altitude, to consider that since the base equals twice the altitude, the square of the base must equal 4 times 18769, and hence that the square of the hypothenuse equals 5 times 18769.

Art. 150. Ex. 83. — The required number must equal 16 times its square root plus once its square root = 17 times its square root; and as any number = the product of its square root multiplied by its square root, 17 must be the square root of the number. Hence, 17^2 = 289 = required number.

Art. 150. Ex. 84. — The required number must equal 120 times its cube root + once its cube root = 121 cube root; and as any number equals the product of its cube root multiplied by the square of its cube root, it follows that 121 is equal to the square of the cube root of the required number. Hence, $\sqrt{121} = 11$ = cube root of the required number, and $11^3 = 1331$ = the number required.

Art. 150. Ex. 85.—Since A's stock = $1\frac{1}{3}$ times B's, the stock of both = $2\frac{1}{3}$ or $\frac{7}{3}$ times B's. From this it is evident that A put in $\frac{4}{7}$ of the stock, and B put in $\frac{3}{7}$ of it. $\frac{4}{7}$ being $\frac{1}{14}$ more than $\frac{1}{2}$, $600 must equal $\frac{1}{14}$ of the whole stock, or the whole stock = 14 times $600 = $8400, and the gain = $\frac{1}{4}$ of $8400 = $2100, of which A has $\frac{4}{7}$ or $1200, and B has $\frac{3}{7}$ or $900.

Art. 150. Ex. 86.—$350^2 = 122500$ = sq. ft. in the lot. The two roads occupy the same space as though they were built along two sides of the field at right angles with each other, and hence the land to be sold must be equivalent to a square 300 ft. on a side, or to $300^2 = 9000$ sq. ft. In order to gain 150 per cent, the land must be sold for 250 per cent, or $\frac{5}{2}$ of its cost. But as only $\frac{90000}{122500} = \frac{36}{49}$ of the original quantity was to be sold, the part sold must bring $\frac{49}{36}$ of $\frac{5}{2}$ of 2 cents per square foot. = $6\frac{29}{36}$ cents per sq. ft.

Art. 150. Ex. 87.—The note was given for $\frac{2000}{1969}$ of $4500 = $4570.848. I received for the flour $\frac{6}{5}$ of $4500 = $5400, from which deducting $75 for the expense of 10 cents per bbl. on 750 bbl., leaves $5325 to be invested in cloth. $\frac{1}{2}$ of $5325 = $2662.50 = sum received for cloth. Deducting $50 for expenses, leaves $2612.50 to be invested in silks. At 50 per cent advance, the silks would sell for 150 per cent = $\frac{3}{2}$ of their cost = $\frac{3}{2}$ of $2612.50 = $3918.75. Hence, they brought $4570.848 — $3918.75 = $652.098 less than the amount of the note due at the bank.

Art. 150. Ex. 88.—The note was given for $\frac{11}{10}$ of $250 = $275, and would net at a bank $275 — $2.887 = $272.113. Amount of the cost $250 for 6 mo. = $257.50. Hence, my gain was $272.113 — $257.50 = $14.613.

Art. 150. Ex. 89.—Ans. = $\frac{9}{4} \times 3.1416 \times 6 \times 62\frac{1}{2}$ lbs. = 2650.725 lb.

Art. 150. Ex. 90.—Face of note = $\frac{2000}{1959}$ of $9795 = $10000 = $\frac{9}{10}$ of value at the end of the 2d year = $\frac{9}{10}$ of $\frac{13}{10}$ of value at the end of the 1st year = $\frac{9}{10}$ of $\frac{13}{10}$ of $\frac{5}{4} = \frac{117}{80}$ of first cost. Hence, cost = $\frac{80}{117}$ $10000 = $6837.607, which, in 3 years, at 6 per cent, compound interest, would amount to $8143.699. Therefore, he gained $9795 — $8143.699 = $1651.301.

Art. 150. Ex. 91.—They will not be together again till the minute-hand has moved the whole circumference of the dial more than the hour-hand. Call that circumference 12 spaces. Then in 1 hour the minute-hand will move over those 12 spaces while the hour-hand moves over only 1 space. Hence, the minute-hand gains 11 spaces per hour, and it will take it as many hours to gain 12 spaces as there are times 11 in 12, which are $1\frac{1}{11}$ times. Hence, the hands will next be together in $1\frac{1}{11}$ hours, or 1 h. 5 m. $27\frac{3}{11}$ sec. past 12.

Art. 150. Ex. 92. — At 3 o'clock, the hour-hand is 3 spaces in advance of the minute-hand, and as it takes the minute-hand one hour to gain 11 spaces, it will take it $\frac{3}{11}$ of one hour $= 16\frac{4}{11}$ minutes to gain 3 spaces, or they will be together at $16\frac{4}{11}$ minutes past 3 o'clock.

Art. 150. Ex. 93. — At 6 o'clock, the hour-hand was ½ the distance round the clock in advance of the minute-hand, but when they are in the required position, the hour-hand will be as much in advance of the 6 o'clock mark as the minute-hand is behind it. Call that distance one space. Then, while the hour-hand was moving over that space, the minute-hand moved over 12 such spaces. Hence, the minute-hand is 12 spaces in advance of the 12 mark, and 1 space behind the 6 mark, and the distance from the 12 mark to the 6 mark is 13 spaces. As it would take the minute-hand 30 minutes to pass over the 13 spaces, it must take it $\frac{12}{13}$ of 30 minutes $= 27\frac{9}{13}$ minutes to pass over the 12 spaces from the 12 mark to the required position. Hence, they attained the required position at $27\frac{9}{13}$ minutes past 6 o'clock.

Art. 150. Ex. 94. — The hands will be in the required position when the two hands together have passed over a distance equal to the whole circumference of the clock. Call the distance the hour-hand will pass over one space; then the minute-hand will have passed over 12 spaces, and the whole distance around the clock will be 13 spaces. Now it will take the minute-hand 1 hour to pass over those 13 spaces, and hence will take it $\frac{12}{13}$ of an hour $= 55\frac{5}{13}$ minutes to pass over the 12 spaces necessary to reach the required position. Hence, the hands will be in the position required at $55\frac{5}{13}$ minutes past 12 o'clock.

Art. 150. Ex. 95. — $6000 \div 80 = 75 =$ number of shares of railroad stock bought. I received for it $75 \times \$90 = \$6750$. The broker paid for the sugar $\frac{100}{102}$ of $\$6750 = \$6617.647$. I sold it to Osgood & Bartlett for $8117.647, receiving in payment a note for $3000, and the remainder, $5117.647, in cash.

My receipts are —
$225.00 = dividend, July 1, 1856.
11.25 = interest to May 1, 1857.
5117.647 = cash received for sugar, Sept. 1, 1856.
204.706 = interest to May 1, 1857.
2946.00 = cash received on note at bank.
109.984 = interest from Sept. 17, 1856, to May 1, 1857.
900.00 = cash received from Osgood & Bartlett, May 1, 1857.

$9514.587 = total receipts.

My expenses were —
$6360.00 = amount due Charles Rogers, May 1,1857
250.00 = expenses Aug. 1, 1856.
11.25 = interest to May 1, 1857.
3000.00 = note paid Jan. 4, 1857.
58.50 = interest to May 1, 1857.

$9679.75 = total expenses.
$9514.587 = total receipts.

$165.163 = loss.

Art. 150. Ex. 96. —
$6000.00 = face of the note, Jan. 1.
123.00 = interest for 4 mo. 3 da.
15.00 = ¼ per cent exchange.

$5862.00 = sum received = 1st cost of cloth.
2931.00 = advance on cloth.

$8793.00 = face of note received for cloth.
196.377 = interest 4 mo. 15 da. from May 4 to Sept. 18.
32.974 = exchange.

$8563.649 = sum received for note, May 4 = receipts.
$6000.00 = due May 4, on note of Jan 1.
750.00 = due May 4, on note of Mar. 1

$6750.00 = total expenses.
$8563.649 = $6750 = $1813.649 = gain.

THE END.

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